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ANNUAL REPORT

OF THE

DEPARTMENT OF LABOR AND INDUSTRIES

FOR THE

Year Ending November 30, 1939

Publication of this Document Approved by the Commission on Administration and Finance

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The Commonwealth of Massachusetts

DEPARTMENT OF LABOR AND INDUSTRIES

OFFICIALS

JAMES T. MORIARTY, BOSTON, *Commissioner.*

MARY E. MEEHAN, BOSTON, *Assistant Commissioner.*

JOHN L. CAMPOS, FALL RIVER, *Associate Commissioner.*

CHARLES H. COLE, BOSTON, *Associate Commissioner.*

LEWIS R. HOVEY, HAVERHILL, *Associate Commissioner.*

HEADS OF DIVISIONS AND BRANCHES

Board of Conciliation and Arbitration:
Charles H. Cole, *Chairman.* John L. Campos. Lewis R. Hovey.

Division of Industrial Safety: William H. Wellen, *Director.*
Raymond F. O'Connell, *Counsel.*

Minimum Wage Commission: Mary E. Meehan, *Executive Secretary.*
Charles H. Cole, *Chairman.* John L. Campos. Lewis R. Hovey.

Division on the Necessaries of Life: John P. McBride, *Director.*

Division of Occupational Hygiene: Manfred Bowditch, *Director.*

Division of Standards: John P. McBride, *Director.*

Division of Statistics: Roswell F. Phelps, *Director.*
Joseph King, *Statistician for Manufactures.*
Lester E. Archibald, *Statistician for Labor.*

Massachusetts Development and Industrial Commission:
Bernard J. Doherty, *Secretary.*

Massachusetts Labor Relations Commission:
Harold L. Burke, *Executive Secretary.*
Michael F. Phelan, *Chairman.* Patrick J. Sullivan. Francis M. Curran.

REPORT OF THE COMMISSIONER OF LABOR AND INDUSTRIES

To the General Court:

The twentieth annual report of the Commissioner of Labor and Industries is herewith submitted. The report is for the year ending November 30, 1939, and includes a statement of the appropriations and expenditures for this period, together with detailed tables and charts showing the work accomplished.

Non-payment of Wages.—The adjustment of complaints under the weekly payment of wages law again stands out as one of the most important duties the department has to perform. How widespread the knowledge of the effective work of this division has become, is best indicated by the fact that despite a greater number of employers attempting evasion of the law during 1939, the sum collected for employes was $85,483.23, an increase of $30,896.07 over the amount paid in 1938. This money represents sums owed small wage earners who are protected by this statute.

Labor Trouble.—The work of the Board of Conciliation and Arbitration increases each year not only in value but in importance. At the inception of the division, fifty three years ago, the annual load totaled 17, in comparison with this year, 1939, a total of 675. The ever increasing numbers of cases handled each year proves the esteem and confidence both employer and employee place in this board. In 1937, 524 cases were heard; in 1938 this number increased to 622, or 18.7% over 1937. In 1939, 675 groups, or 8.5% more, placed their differences before this branch of the department.

Minimum Wage Law.—Also increasing in scope are the duties of the Division of Minimum Wage, and although $28,256.05 was collected in retroactive wages during the year 1939, representing sums due Massachusetts wage earners because of violation of the minimum wage law by employers, nevertheless the outlook is generally good. Both employers and employees are increasingly cognizant of the provisions of this law and are cooperative and indicate a willingness to comply.

Motor Fuel Sales.—Chapter 459 of the acts of 1939, amending existing legislation, provides for the stabilizing of the retail gasoline dispensing industry and for the enforcement of the present law in relation to price posting and the prohibition of adulteration and substitution of motor fuel and lubricating oil. To properly carry out the provisions of this new legislation it was necessary to increase the personnel of this division.

James T. Moriarty,
Commissioner of Labor and Industries.

FINANCIAL STATEMENT FOR 1939

Income

Division of Industrial Safety		
Fees for issuance of employers' permits to distribute industrial home work certificates	$2,750.00	
Fees for registration of painters' rigging and for examination for certification as painters' rigger	18,654.00	
Total receipts of the division of industrial safety		$21,404.00
Division of Standards		
Collected in fees and paid into the treasury of the commonwealth	$74,978.50	
Collected in fees and paid into the treasuries of cities, towns and counties of the commonwealth	40,917.00	
Penalties for violations of hawkers and pedlers laws	542.50	
Paid directly to State Treasurer for witness fees	23.80	
Total receipts of the division of standards		$116,461.80
Division on the Necessaries of Life		
Total receipts of the division on the necessaries of life		$39,105.00
Total receipts of the department of labor and industries		$176,970.80

Expenditures

Account	Appropriations and balances forwarded from 1938	Expenditures	Unexpended Balance
Administration:			
Commissioner, assistant and associate commissioners, personal services	$23,500.00	$23,500.00	—
Clerical and other assistance, personal services	7,760.00	7,760.00	—
Division of Industrial Safety:			
Inspectional service, personal services and expenses	171,972.46	169,129.63	$2,842.83
Division of Statistics:			
Statistical service, personal services and expenses	74,649.04	74,131.09	517.95
Board of Conciliation and Arbitration			
Personal services	22,000.00	21,481.77	518.23
Other Expenses	3,645.49	3,640.93	4.56
Minimum Wage Commission:			
Personal Services	23,580.00	23,184.94	395.06
Other Expenses	3,356.15	3,343.86	12.29
Wage Boards	2,441.92	1,910.34	531.58
Division of Standards:			
Personal services	33,400.00	32,714.29	685.71
Other expenses	11,046.33	9,425.97	1,620.36
Division on the Necessaries of Life:			
Personal services	9,850.00	9,718.06	131.94
Other expenses	1,299.31	1,169.82	129.49
Motor Fuel Sales, Administration Expenses	17,000.00	12,439.91	4,560.09
Division of Occupational Hygiene:			
Personal services	12,460.00	12,300.00	160.00
Other expenses	5,560.27	5,504.01	56.26
Massachusetts Development and Industrial Commission:			
Personal services	10,150.00	8,769.83	1,380.17
Other expenses	88,304.31	73,220.17	15,084.14
Special Commission on Apprentice Training:			
Personal services and expenses	2,667.72	1,473.81	1,193.91
Total	$524,643.00	$494,818.43	$29,824.57
Labor Relations Commissions			
Personal services	55,900.00	53,289.69	2,610.31
Other expenses	9,239.53	9,202.80	36.73
Total	$65,139.53	$62,492.49	$2,647.04
Recapitulation			
Officials	$23,500.00	$23,500.00	—
Personal services and expenses	498,475.28	469,844.62	$28,630.66
Special Commission on Apprentice Training	2,667.72	1,473.81	1,193.91
Labor Relations Commission	65,139.53	62,492.49	2,647.04
GRAND TOTAL	$589,782.53	$557,310.92	$32,471.61

Financial statement verified.
Approved:
GEO. E. MURPHY, *Comptroller.*

REPORT OF THE DIVISION OF INDUSTRIAL SAFETY

WILLIAM H. WELLEN, *Director*

ADMINISTRATION

To this division has been assigned the tremendous task of the enforcement of approximately thirteen hundred laws, rules and regulations written into the statutes and formulated by the department for the protection of the health and lives and safeguarding from bodily injury the many thousands of men, women and children engaged in the promotion of the industrial life of this commonwealth, as well as of the preservation of those beneficial conditions of employment that have been established by statute, only after many years of constant and persistent endeavor in the field of humane and progressive legislation.

This important work is carried on by a staff of forty-two inspectors who make systematic and periodic inspections of all industrial and mercantile establishments, all construction of public works and various building operations, and many other places of employment throughout the commonwealth, as well as a prompt and thorough investigation of all complaints that are made either directly to the inspector in the field or through the medium of the office.

Our inspectors are constantly on the alert for infractions and violations of all laws that come under the jurisdiction of the division. It is interesting to observe that the vast majority of these violations of the labor laws are corrected by persuasion and education rather than by prosecution which is resorted to in comparatively few instances and only as a last extremity.

SUMMARY OF ACTIVITIES

During the past year 54,911 inspections were made. These were followed by 10,843 reinspections where orders had been issued. 12,306 other visits of a variable nature were made, making a total of 78,060 inspections and visits. The following table will indicate these visits and inspections in detail:

Inspections:	
Mercantile establishments	31,168
Mechanical establishments	6,724
Manufacturing establishments	4,913
Building operations	3,362
Painting operations	4,261
Public works	4,483
	54,911
Reinspections	10,843
Other Visits:	
Complaints	5,916
Accidents	1,454
Occupational diseases	273
Homework	1,718
PWA projects	847
Printing	430
All others	1,668
	12,306

Employees in Industrial Establishments Inspected

In the 42, 805 establishments inspected during the year a total of 806,638 persons were employed. Of this number 31,168 were mercantile establishments, with a total of 176,906 employees; 6,724 mechanical establishments, with a total of 169,561 employees; 4,913 manufacturing establishments, with a total of 160,171 employees. The following is an analysis of these employees by age groups:

	All establishments	Mercantile	Mechanical	Manufacturing
Males				
14 to 16 years	432	252	144	36
17 to 20 years	30,187	8,287	5,525	16,375
21 and over	488,251	100,127	113,857	274,267
	518,870	108,666	119,526	290,678
Females				
14 to 16 years	115	51	58	6
17 to 20 years	38,194	8,647	5,585	23,962
21 and over	249,459	59,542	44,392	145,525
	287,768	68,240	50,035	169,493

Orders Issued

Inspectional work constitutes the major part of the duties of the division. When in the course of these inspections it is found that either the laws or rules and regulations of the department are being violated orders are issued to correct these violations. Following up these orders reinspections are persistently made until the orders have been fully complied with. During the past year 20,158 orders were issued, including 9,233 verbal orders which were complied with at the time they were issued. A total of 19,904 orders were fully complied with during the year. The number of outstanding orders at the end of the year was 1,334. Of these 20,158 orders, 11,062 related to labor; 5,407 to health and sanitation; 2,096 to safety; 400 to building operations; 829 to painting operations; 260 to public works, and 104 to miscellaneous subjects.

Classification of orders issued:

Labor: Employment of minors, 79; overtime employment and time notices improperly posted, 7,488; prohibited trades and dangerous machinery, 20; public exhibition of children, 4; educational certificates, 3,471. Total, 11,062.

Health and Sanitation: Sunday work and one day's rest in seven, 2,011; toilet and washing facilities, 1,818; rest rooms and medical chests, 868; improper lighting, 276; gas, fumes and improper ventilation, 224; common towel and drinking cup, 62; meal periods for women and minors, 59; pure drinking water, 32; seating facilities for women and minors, 31; dust hazard, 14; providing lockers, 12. Total, 5,407.

Safety: Guarding dangerous machinery, 1,940; free egress from buildings, 104; unguarded openings, 49; improper communication with engine room, 3. Total, 2,096.

Building operations: Total, 829.

Painting operations: Total, 400.

Public works: Posting rates and classifications, 122; submitting payrolls, 68; citizens preference, 61; weekly payment of wages, 6; eight hour day, 3. Total, 260.

Miscellaneous: Tickets to weavers, 3; piece work rates, 18; homework licenses, 15; weekly payment of wages, 62; not giving monetary compensation, 3; storing explosives, 2; marking benzol containers, 1. Total, 104.

Complaints

Very many complaints are received by the division from various sources, some of which are made directly to the inspector, others by letters to the division, many are anonymous. A number of complaints are made over the telephone and some by personal calls. It has always been the policy of the division to investigate every complaint promptly. During these investigations our inspectors are always very careful not to divulge the names of the complainants or compromise them in any way. During the past year 5,497 complaints were made, 3,251 of these complaints were for non-payment of wages. 2,246 were general complaints of violations of our labor laws. 2,113 of these were filed by individuals and 133 by cooperative agencies.

After investigation of these general complaints 1,085 were found to be justified and 1,099 unjustified, 62 were still in the process of investigation at the end of the year. These complaints were divided as follows:

Overtime employment of women	903
Overtime employment of minors	89
Violation of 45 minute lunch period	11
Improper posting of time notices	83
Illegal advertising	5
Unguarded machinery	16
General labor complaints, including one day's rest in seven, holiday employment and homework	396
Health and sanitation	203
Violation of painting rules and regulations	451
Violation of building rules and regulations	11
Public works, including citizens preference	78
Total	2,246

Accident Investigations

All accidents occurring in their respective districts are promptly reported by our inspectors and in addition, all reports of industrial accidents filed with the Industrial Accident Board are examined by an employee of this division. All fatal accidents, all injuries to minors, serious machinery accidents, serious eye injuries, serious building accidents and occupational diseases are thoroughly investigated by the inspector in whose district the accident occurred, and in many instances are followed by prosecution.

During the past year 855 industrial accidents were investigated by this division. In the following tables they will be found classified by industry, age and type of injury groups.

Classified by industry and age, they are as follows:

Industry	Totals M.	Totals F.	14-17 M.	14-17 F.	18-20 M.	18-20 F.	21-60 M.	21-60 F.	60 and over M.	60 and over F.	Fatal M.	Fatal F.
Textile	159	26	5	1	12	5	130	20	12	—	14	—
Paper	72	9	2	1	10	—	55	7	5	1	4	1
Foundry	79	—	3	—	7	—	63	—	6	—	7	—
Shoe	57	17	12	4	12	3	29	10	4	—	1	—
Metal	47	9	—	—	5	2	40	7	2	—	—	—
Woodworking	45	1	2	—	4	1	37	—	2	—	3	—
Food products	38	6	2	1	5	2	30	3	1	—	3	—
Tannery	32	4	1	2	2	1	28	1	1	—	2	—
Rubber	29	5	1	—	4	1	24	4	—	—	—	—
Electrical	19	4	1	1	—	1	16	2	2	—	4	—
Chemical	18	2	—	—	3	1	15	1	—	—	4	—
Toys and novelties	13	6	—	—	2	2	11	4	—	—	—	—
Clothing	10	8	4	4	2	2	3	2	1	—	—	1
Printing	16	1	3	—	3	—	7	1	3	—	—	—
Mercantile	9	1	—	—	2	—	7	—	—	1	4	1
Hardware	8	1	3	—	—	—	5	1	—	—	2	—
Brush mfg.	5	2	1	—	2	1	2	1	—	—	—	—
Laundry	2	4	—	1	—	1	2	2	—	—	—	—
Silversmiths	4	2	—	—	—	1	4	1	—	—	—	—
Plastics	6	—	—	—	—	—	6	—	—	—	—	—
Battery mfg.	3	1	—	—	—	1	3	—	—	—	—	—
Ship building	3	—	—	—	—	—	3	—	—	—	1	—
Fireworks	2	1	—	—	—	1	2	—	—	—	—	—
Curtain mfg.	—	3	—	—	—	3	—	—	—	—	—	—
Floor covering mfg.	2	1	—	—	2	1	—	—	—	—	—	—
Miscellaneous	50	13	4	1	5	5	37	7	4	—	12	1
Totals	728	127	44	16	82	35	559	74	43	2	61	4

Classified by type of injury, they are as follows:

Type of Injury	Total	Non-Fatal	Fatal
Amputations	247	246	1
Abrasions, bruises, contusions	244	236	8
Lacerations, punctures	135	125	10
Fractures	119	101	18
Burns	58	52	6
Eye injuries	23	23	—
Crushed to death	8	—	8
Fatal falls	6	—	6
Overcome by fumes	6	5	1
Strains and sprains	4	—	4
Internal injuries	3	1	2
Electrical burns	2	1	1
Totals	855	790	65

Of this number of accidents, 725 were caused by contact with machinery, 665 of these machines were provided with guards at the time of the accident; 365 of the establishments where these accidents occurred maintained first aid rooms; 30 of these employed full time doctors and nurses; 112 employed a nurse only; 155 employed persons qualified to render first aid in compliance with the law; the remaining establishments were supplied with medical chests.

Of the 65 fatal accidents, 61 were men and 4 women.

The causes of these fatal accidents were as follows:

Fractures	18	Strains and sprains	4
Lacerations	10	Internal injuries	2
Abrasions and bruises	8	Amputations	1
Crushed to death	8	Electrocution	1
Fatal burns	6	Overcome by fumes	1
Fatal falls	6		
		Total	65

Accidents in the Building Trades

There were 136 accidents in the building trades investigated by this division; 23 of these were fatal. In the tables below they are classified as to type of injury and employment.

Classified by Type of Injury:

	Total	*Non-Fatal*	*Fatal*
Fractures	71	56	15
Abrasions	34	34	—
Internal injuries	6	4	2
Amputions	6	6	—
Punctures, lacerations	5	5	—
Burns	4	3	1
Concussion	3	3	—
Electrocutions	2	—	2
Crushed to death	2	—	2
Eye injuries	2	2	—
Suffocations	1	—	1
Totals	136	113	23

Classified by Type of Employment:

	Total	*Non-Fatal*	*Fatal*
Construction	52	42	10
Painting	41	38	3
Roofing	21	18	3
Alteration and repair	11	8	3
Bridge building	4	2	2
Tunnel construction	3	3	—
Building wrecking	2	1	1
Sewer construction	2	1	1
Totals	136	113	23

Occupational Diseases

Since the establishment of the division of occupational hygiene in this department, this division has been enabled to correct more effectively and to prevent occupational hazards in industry through the splendid cooperation of that division.

During the past year 169 cases of industrial diseases came to the attention of this division. Of these cases only 6 were fatal, all of whom were men. These are tabulated as follows:

Type of Disease	*Total*	*Non-Fatal*		*Fatal*	
		Male	*Female*	*Male*	*Female*
Dermatitis	130	86	44	—	—
Lead poison	16	15	—	1	—
Gas and fume poison	7	7	—	—	—
Chrome poison	6	6	—	—	—
Tuberculosis	3	2	—	1	—
Anthrax	3	2	—	1	—
Silicosis	3	1	—	2	—
Benzol poison	1	—	—	1	—
Totals	169	119	44	6	0

Weekly Payment of Wages

The services that are rendered to the wage earners of the commonwealth as a result of this weekly payment of wages law are rapidly increasing from year to year. During the past year $85,483,23, were collected by this division under the provisions of this statute, as compared to the amount of $54,587.16 in 1938. During the past year 6,804 persons made inquiries at the division offices relative to this law. Of this number 3,251 made specific complaints against their employers, 410 office hearings were held to determine the status of these complaints, and 1121 cases were marked for court. More detailed information will be found in the following tables:

Number of complaints	3,251
Total amount of wages collected	$85,483.23
Number of office hearings held	410
Number of cases marked for court	1,121
Number of cases where settlement was made before trial	551
Number of convictions	476
Number of not guilty findings	10
*Number of complaints refused by the courts	84

*These cases were refused by the courts for the following reasons:

Where disputes were involved	47
For insufficient evidence	14
Had civil actions pending	6
Contracts	4
Bankruptcy	3
Wrong jurisdiction	3
Complainant in jail, defendant in hospital	1
Where complainant was found to be a partner of the defendant	1
Where no rate of pay was established	1
Where witness died	1
Wrong defendant	1
Valid set-off	1
Better address needed for defendant	1

Homework

During the year 55 homework permits were issued to manufacturing establishments doing business in Massachusetts, and to agents of out of state concerns, compared to 53 permits issued in 1938. An annual fee of fifty dollars is assessed to the employer for a permit to distribute home work. The total amount collected for employers' permits during the past year was $2,750 and during the same period 1,643 homeworkers' certificates were issued to persons engaged in home work throughout the Commonwealth. These homeworkers' certificates are issued without charge and before they may be issued a careful investigation must be made by an inspector to ascertain that the homeworker is not suffering from any infectious, contagious or communicable disease, and that she is living in a home that is clean, sanitary and free from infectious, contagious or communicable disease. Consequently, the home of every prospective homeworker must be visited by an inspector of this division and thereafter the inspector must be ever on the alert to prevent violations of the statute, to ascertain that the minimum wage is maintained, that children under sixteen are not employed, etc.

Under the law the number of homeworkers' certificates that may be granted persons employed by one concern is unlimited and in many instances the request for homeworkers' certificates by far exceeds the number of homeworkers actually employed by the concerns for which they were issued.

It can be readily understood that the cost of supervision under this statute is far in excess of the receipts. Taking into consideration the saving in overhead made by the employer who is given the privilege of distributing homework, saving in floor space, heating and lighting, the purchase of machinery and other incidental expenses, and the tremendous cost of supervision imposed upon this division, it would appear that the fee of fifty dollars is far too low and I hereby recommend that it be substantially increased so that the receipts will cover at least a major portion of the expenses.

The classifications of establishments to whom were issued employers' permits during the year are as follows:

Shoe novelties	15	Leather novelties	6
Wearing apparel	11	Miscellaneous	7
Jewelry	10		
Toys and games.	6	Total	55

Building Operations Under Chapter 461.

During the past year classification and minimum wage rates were established for 886 building projects in various towns, cities and counties and for state departments. Additional classifications were furnished for 113 of these projects and revised rates were furnished for fifteen of the above mentioned projects. 3,595 inspections were made to ascertain that the wages were being paid according to classifications, that there was no overtime employment and that citizens of the commonwealth were given preference for employment, and to ascertain that the safety regulations were being complied with. The amount of $5,859.31 was collected for the employees after investigation had disclosed that the predetermined rates had not been complied with by the employer. Twenty-six schedules of classifications and minimum wage rates were furnished to the United States Department of Labor to be used by them to predetermine wage rates for federal projects.

Painting Certificates

The law making it mandatory to license painting riggings and that an employee with a rigger's license be located on the job at all times has been of great benefit to both the employer and employee. The employee has benefited because of the sharp reduction in accidents of all kinds caused either by bad equipment which heretofore had not been inspected or by the setting up of riggings by men who were not qualified to do so. The employer has benefited by a substantial reduction in the premiums paid for his workmen's compensation insurance. During the past year the amount of $18,654 was collected in fees covering both rigging and riggers certificates. It is safe to say that this amount by far exceeds the expenses incurred by the enforcement of this statute. Of this amount $4,285 were received for original rigging registrations, $4,712 for renewal of rigging registrations; $2,458 for orginal riggers certificates and $7,207 for renewal of riggers certificates. The examinations for painters riggers license certificates were conducted weekly by our painting examiners and special examinations were conducted at our branch offices by our regular inspectors of building operations.

Following is a table indicating the number of rigging registrations and the result of the riggers examinations:

Month	Original Reg. Rigging	Renewal Reg. Rigging	Exams. Riggers' Certificates Passed	Failed	Renewal Riggers' Certificates
December	13	0	54	1	1
January	7	1	13	1	4
February	11	519	21	5	750
March	36	2,229	76	8	3,556
April	91	903	110	12	1,807
May	219	83	270	46	216
June	206	55	237	36	116
July	69	18	94	20	60
August	77	17	82	13	48
September	63	6	67	19	25
October	45	8	45	11	19
November	20	5	43	7	18
Total	857	3,844	1,112	179	6,620

State Printing

On December 1, 1938, there were 59 firms complying with the provisions of chapter 419 of the acts of 1938. During the year 430 inspections were made of printing establishments engaged in state printing. In the course of these inspections it was found that sixteen establishments who had previously qualified by complying with the provisions of the act were found to be violating the statute at the time of inspection and the state printing office was so notified and the matter corrected. During the year we were requested to make 75 investigations of new establishments. Of this number 26 only were found qualified to do state printing under the statute, and the remaining 49 were not.

Report of the Legal Department

During the year the department prosecuted defendants on 917 counts.

There were:

698 Guilty findings
23 Not guilty findings
4 Nol prossed
166 Dismissed
26 Defaults

The 698 guilty findings included:

476 Wage complaints
133 Women and minors violations
33 Violations of One Day's Rest in Seven Law
16 Violations of the Structural Painting Law
14 Violations of the Industrial Homework Law
7 Violations — Failure to Post Sunday Schedule
5 Violations — Toilet Rules
3 Violations — Free Egress (locked doors)
2 Violations — Employment on Hazardous Machinery
2 Violations — Failure to Guard Machinery
2 Violations — Failure to Provide Exhaust
1 Violation — Failure to Keep Time Book
1 Violation — Failure to Label Benzol Container
1 Violation — Failure to Provide Ventilation
1 Violation — Failure to Post Piece Price
1 Violation — Failure to Provide Communication (in mfg. plant where steam is used)

The 23 Not Guilty findings included:

10 Wage disputes
7 Women and minors violations
4 Overtime on public works
1 Illegal advertising
1 Violation of citizen's preference

The 4 Nol Prossed cases included2

3 counts — employment of women without time notice posted
1 count — employment of women at time other than as stated on printed notice

In the Lower Court this defendant was fined $50.00 on each count. In the Superior Court the case was nol prossed, as action should have been taken against the corporation instead of the individual.

The 166 Dismissed cases included:

131 Wage complaints — wages paid
23 Women and minors violations
8 Public works violations
3 Wage complaints
1 Failure to guard machinery

The 26 defaults included only defendants on wage complaints.

Since December 1, 1938, 6,804 persons called at the department's offices believing they had cause to complain concerning wage matters. The department accepted 3,251 complaints (and of this number 1,933 have reported payment in full.) The balance, 3,553 were not accepted by the department for the following reasons:

1743 persons making inquiry on the law, notice, vacations, etc.
459 where department had no jurisdiction
343 persons had contracts
283 valid set-offs existed
220 disputes involved
215 commissions
169 cases were outlawed for time or defendants had left the state
121 had insufficient data or information required to file complaint

The department held 410 office hearings on wage complaints during the year. The sum of $85,483.23 was paid by employers during the year, after this department acted on the complaints of employees.

During the year the following cases were appealed from findings in the lower court and later disposed of in the Superior Court:

Offence	*Lower Court*	*Superior Court*
8 counts—Non-payment of wages.	Defendant sentenced 3 mos. House of Correction.	Wages paid—case filed.
6 counts—Non-payment of wages.	Defedant sentenced 2 wks. each count.	Placed on probation.
3 counts—Non-payment of wages.	Defendant sentenced 30 days House of Correction.	Given 2 mos. susp. sentence.
3 counts—Non-payment of wages.	Defendant fined $35 on each count	Sentenced 3 mos. House of Correction.
3 counts—Non-payment of wages.	Defendant fined $15 on each count.	Wages paid—case filed.
1 count—Non-payment of wages.	Defendant sentenced 1 mo. House of Correction.	Wages paid—case filed.
1 count—Non-payment of wages.	Defendant fined $50.	Wages paid—case filed.
1 count—Violation cit. pref.	Defendant fined $100.	Not guilty.
4 counts—Violation women & minors.	Defendant fined $200 ($50 each)	Nol Prossed.

New Legislation

The legislature of 1939 enacted many new laws directly effecting and considerably increasing the work of this division. In chapter 377, of the acts of 1939, an amendment broadening the scope of the forty-eight hour law, so-called, for the protection of women and children in industry, brought under the provisions of this division thousands of places of employment that heretofore did not come under the provisions of the forty-eight hour law, including offices of all kinds, financial institutions, theatres and other places of amusement.

The following is a list of these new laws:

Chapter 94 — An Act providing for a maximum fee for the badges of certain newsboys, amending General Laws, Chapter 149, Section 70.

Chapter 96 — An Act authorizing the Commissioner of Labor and Industries to suspend until April first, nineteen hundred and forty-one, the six o'clock law, so-called, relating to the hours of employment of women in the textile industry, amending General Laws, Chapter 347 of the Acts of 1933, and Chapter 68, of the Acts of 1938.

Chapter 125 — An Act exempting orders for payment of subscription to non-profit hospital service corporations from the corporation of the laws regulating assignments of wages, amending General Laws, Chapter 154, Section 8.

Chapter 193 — An Act further regulating the appearance of certain children on the stage of certain theatres, amending General Laws, Chapter 149, Section 60.

Chapter 235 — An Act extending the requirement of hours of rest for employees to mechanical establishments and workshops, extending to certain employers the requirements that they post schedules of Sunday workers and repealing the requirement that such schedules be filed with the Department of Labor and Industries, amending General Laws, Chapter 149, Sections 48 and 51.

Chapter 255 — An Act further regulating the hours of labor on certain minors in certain trades and occupations, amending General Laws, Chapter 149, Section 66.

Chapter 273 — An Act to prohibit the employment of minors under fourteen in pool or billiard rooms and in certain stables, amending General Laws, Chapter 149, Section 60.

Chapter 280 — An Act extending the lunch hour provision, amending General Laws, Chapter 149, Section 100.

Chapter 348 — An Act decreasing the hours of labor for certain minors, and further regulating the number of consecutive hours within which certain minors may be required to work, amending General Laws, Chapter 149, Section 67.

REPORT OF THE BOARD OF CONCILIATION AND ARBITRATION

Charles H. Cole, *Chairman;* Lewis R. Hovey, John L. Campos

Administration

On December 1, 1938, eight joint applications for arbitration were pending. During the year 306 joint applications were filed, making a total of 314. Of these 32 were abandoned, withdrawn or settled; decisions were rendered in 258 cases, also four supplemental decisions; 16 cases are now pending. One petition for a certificate of normality was filed and one certificate was issued.

During the past year the duties of the Board have been increased by reason of additional conciliation cases coming before it, which increase has not been caused by an increased number of industrial disputes, but rather because the offices of the Board have been used for conciliation purposes more than ever before by both employers and employees. This is in accordance with section 3 of chapter 150 of the General Laws, which requires that the mayor of a city, the selectmen of a town, employers or employees shall report every case of a labor dispute to this Board for possible conciliation. The duty of the Board is to prevent any cessation of work in labor disputes and it has been very successful during the past year. Massachusetts will show less man hours lost through strikes than any similar industrial state in the country.

The most important labor dispute during the year was the strike of members of Local No. 25 of the International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers of America against the Employers Group of Motor Freight Carriers, of about 200 members. The first date for conciliation was December 28, 1938, and the last conference before the strike was called was January 3, 1939. The total number of hours spent by the Board during the concilation of this strike was 104. The terminals of railroads, docks, warehouses and fish piers were clogged with foodstuffs, necessaries of life and general merchandise. The general public was affected by a shortage of fish, vegetables, fruit and meat. Necessaries of life were permitted to be moved, however. The questions in dispute involved wages and working conditions. Compromises on the part of both employers and employees finally resulted in a settlement of this strike.

Recommendations

1. The Board urgently recommends that it be given adequate space, either in the state house or outside, in which it may hold its conferences and hearings. It has at the present time one hearing room and there have been many occasions during the past year when there have been six conferences or hearings going on at the same time and the Board has been obliged to use not only its own office, but the office of its investigators, outside rooms in the state house, as well as its own corridor and the state house corridor for the purpose of conferences. This is not conductive to efficiency.

2. The Board urgently recommends that it be relieved of its duties as minimum wage commissioners. As the law is now, authority is divided, certain duties being given to the Minimum Wage Commission and other duties being given to the Commissioner of Labor and Industries. In addition to this, the Board feels that its duties as conciliators and arbitrators take up its whole time and it does not have time to give the proper attention to the duties of the Minimum Wage Commission.

List of Industries Affected and Principal Differences in Conciliation and Arbitration Cases

Conciliation
Industries Affected

Automobiles	Express	Movers
Bakers	Fish	Oil
Barbers	Fruit and Produce	Paper
Beverages	Furniture	Poultry
Brewers	Garages	Restaurants
Building Maintenance	Grocers	Rubber
Building Trades	Heat and Power	Shoes
Chauffeurs	Hardware	School Supplies
Candy	Hotels	Taxi
Cleansers and Dyers	Iron	Textiles
Clothing Manufacturers	Laundries	Transportation
Coal	Leather	Upholstering
Construction	Liquor	Warehouses
Cotton	Longshoremen	Window Cleaners
Dairy Products	Lumber	Woolens
Electrical Goods	Markets	

Principal Differences

Wages	Discrimination
Hours	Union Recognition
Working Conditions	Terms of Agreement
Discharge	Removal

Arbitration
Industries Affected

Advertising	Fruit and Produce Dealers
Auto Repair Companies	Furniture Dealers
Baking	Garment Manufacturers
Books	Grocery Stores
Cleansers and Dyers	Heat and Power
Coal and Fuel	Laundries
Educational Materials	Leather
Fish Dealers	Movers
Food Markets	

Principal Differences

Wages	Discrimination
Seniority	Violation of Agreement
Hours	Interpretation of Agreement
Discharge	
Working Conditions	Working Agreement

REPORT OF THE MINIMUM WAGE COMMISSION

Charles H. Cole, *Chairman;* Lewis R. Hovey, John L. Campos.
Mary E. Meehan, *Executive Secretary;*
Katherine A. Foley, *Director.*

Chapter 430, 1936, Chapter 401, 1937

Outline of Functions

The duties of the Minimum Wage Commission under the law comprise the following functions: Investigating the wages of women and minors in occupations where there is reason to believe that the wages of a substantial number are below the requirement of healthful living; establishing wage boards to recommend minimum rates for women and minors entering wage board orders based on the recommendations of the boards; inspecting to determine compliance with the orders issued; reconvening wage boards to meet the changes in cost of living; publishing the names of employers found violating its orders, and collecting retroactive wages where it was found that employees had not been paid in accord with the order under which they were employed.

Changes in Personnel of the Division

Mr. Lewis R. Hovey of Haverhill was appointed by Governor Saltonstall to fill the vacany of Mr. Raymond V. McNamara who resigned to accept another position. Mr. Hovey will act as representative of the employers on the Minimum Wage Board.

Mrs. Katherine A. Foley of Lawrence was appointed as Director of the Minimum Wage Division on December 20, 1938. Prior to this appointment, the administration of Minimum Wage work has been under the direction of the Assistant Commissioner who acted as the Executive Secretary of the Commission.

Legislation in 1939

The Minimum Wage Law which was enacted in 1937, has been in effect for two years. During this period the Commission has secured very satisfactory results under its mandatory provisions. However, it has been necessary to enact further legislation to assist in securing further compliance with the Commission's orders. During 1939, the following amendment was passed:

Chapter 275.—An Act relative to evidence of the establishment of minimum fair wage rates.

Chapter one hundred and fifty-one of the General Laws, as appearing in section one of chapter four hundred and one of the acts of nineteen hundred and thirty-seven, is hereby amended by inserting after section twenty the following new section: — *Section 20A.* In any prosecution under section nineteen or in any action or suit under section twenty, a copy of a mandatory order covering any occupation, together with a certificate attesting the correctness of the copy and setting forth that on the date of such certificate such order is in force, signed by the commissioner and the genuineness of the signature attested by the state secretary in accordance with section seventy-six of chapter two hundred and thirty-three, shall be competent evidence equally with the original order, and shall be prima facie evidence that the provisions of this chapter relative to the establishment of minimum fair wage rates in such occupation were complied with prior to the making of such order, and that such order has continued in full force and effect up to the date of such certificate. (*Approved June 9, 1939.*)

Outline of Activities

Wage Boards

At the close of 1938 fiscal year, three wage boards were still in session, namely: knit goods, office and other building cleaners and the beauty culture occupations. Following the public hearing on the recommendations of the boards, the Minimum Wage Commission accepted the reports and declared the industries to be operating as directory order, on the following dates, respectively:

Industry	*Directory Order Date*
Knit Goods	March 1, 1939
Office and Other Building Cleaners	June 1, 1939
Beauty Culture	September 1,1939

The millinery, canning and preserving, minor lines of confectionery and food preparations, and knit goods occupations, which had been functioning as directory orders for the required three months' period, were made mandatory on the following dates, respectively: February 1, March 2, and June 2, 1939.

A new wage board was established for the jewelry and related lines industry. This is the second board established for this industry under the mandatory order. The Commission accepted the report of the board and declared it a directory order on August 1, 1939.

The rates for experienced employees, as well as learners and apprentices, special provisions and definitions, will be found later in this report for the above-mentioned order.

There are now twenty-three occupations covered by minimum wage orders, twenty of which are operating under mandatory order.

Inspections

Inspections, initiated last year, have been continued during the present year under the following orders: boot and shoe cut stock and findings, bread and bakery products, candy, canning and preserving, minor lines of confectionery and food preparations, corset, druggists' preparations, proprietary medicines and chemical compounds, electrical equipment and supplies, knit goods, laundry and dry cleaning, men's clothing and raincoat, men's furnishings, millinery, office and other building cleaners, paper box, pocketbook and leather goods, retail store, stationery goods and envelopes, toys, games and sporting goods, women's and children's underwear, neckwear and cotton garment, and women's clothing.

Reinspections have also been made under many of these orders for the purpose of checking to ascertain whether or not employers have fulfilled their obligations to meet compliance as promised.

In connection with the regular inspection work, home work has been found in 11 firms under 4 orders, covering 148 records of employees. In addition to the above inspections, records were also taken for 1602 employees employed in 23 establishments that were not covered by any minimum wage order.

In the regular inspection work, wage records were secured for 42, 447 women and minors in 2337 establishments. In addition, 62,964 reinspection records were taken under 16 orders, including 215 establishments. These figures, including home workers and those for industries not covered by any minimum wage order make a total of 2586 firms visited and 107,161 records secured.

Disposition of Cases of Non-Compliance Pending from Previous Year

(See Table 2.)

At the beginning of the year there were outstanding from the previous year 2,486 cases of non-compliance in 96 establishments. The majority of these cases came under the women's and children's underwear, neckwear and cotton garment, men's clothing and raincoat, and men's furnishings occupations. There were also 195 cases in 7 pocketbook and leather goods establishments, 78 cases in 12 boot and shoe cut stock and findings firms, 74 in 3 paper box factories, 70 cases working in 2 office and other buildings, and 46 cases in 12 retail stores.

The remaining cases were divided among a few firms under each of the following orders: bread and bakery products, candy, canning and preserving, minor lines of confectionery and food preparations, corset, druggists' preparations, proprietary medicines and chemical compounds, electrical equipment and supplies; jewelry and related lines, laundry and dry cleaning, millinery, and women's clothing.

Adjustment: The Commission has been very successful in bringing about some form of adjustment in its non-compliance cases. Wages were raised for 517 employees in 34 firms. Adjustment was promised or reported for 420 employees in 20 establishments. Three hundred and forty-eight employees in 31 establishments were reported as left, laid off or discharged. Adjustment by change of work, hours or method of payment, whereby employee was enabled to earn the minimum, was made in 43 cases in 5 firms. There were 3 employees in 3 firms who were incorrectly recorded, and one employee was covered by the piece rate ruling. Two employees in 1 firm were issued special license permits, and 3 establishments with 11 employees were reported as out of business. One hundred and ninety-two employees in 12 firms would be absorbed by the first inspection under the directory or mandatory order. Retroactive wages for 804 employees in 10 firms were collected by the Commission.

Pending: At the close of the fiscal year the adjustment of 145 cases in 15 firms was still pending. These cases were found mainly in the pocketbook and leather goods industry with 103 cases in 5 firms, and the boot and shoe cut stock and findings occupation with 22 cases in 4 firms. The rest of the pending cases were found in the laundry and dry cleaning, men's clothing and raincoat, retail store, and women's and children's underwear, neckwear, and cotton garment occupations.

Disposition of New Cases of Non-Compliance Found in Firms Having Cases Pending from Previous Year

(See Table 3.)

In the course of reinspection of cases pending from the previous year, 346 new cases of non-compliance were found in 13 establishments. The majority of these cases, 245 in 2 firms, came under the provisions of the pocketbook and leather goods order. The remaining cases were distributed among the boot and shoe cut stock and findings, men's clothing and raincoat, and women's and children's underwear, neckwear, and cotton garment industries.

Adjustment: With respect to the cases settled, wages were raised for forty employees in 4 firms. Adjustment was promised or reported for 261 employees in 5 firms, and 39 employees in 5 firms were reported either to have left, been laid off or discharged. One employee was issued a special license permit.

Pending cases: At the close of the fiscal year there were five cases pending in the pocketbook and leather goods industry.

Disposition of Cases of Non-Compliance in the Regular 1939 Inspection

(See Table 4.)

In the regular inspection work, 7,322 cases of non-compliance were found in 687 establishments.

Adjustment: In the cases settled, wages were raised for 761 employees in 168 establishments. Adjustment was promised or reported for 1,535 employees in 345 establishments. In 103 firms 290 employees were reported to have left, been laid off or discharged, while 37 employees in 19 firms had their work, hours or method of payment changed, which enabled them to earn the minimum. Fifty-two employees in 15 firms were incorrectly recorded. Two firms employing 35 women were out of business, while 19 employees in 15 firms were issued special license permits. One employee was covered by the piece rate ruling, and one was considered a technical non-compliance.

In connection with its inspection work, the Commission collected retroactive wages for 2,907 employees in 49 establishments. Of these, 2,121 were employees in 18 women's and children's underwear, neckwear, and cotton garment firms, 373 employees were engaged in 5 men's clothing and raincoat establishments, 248 employees were in 4 men's furnishings establishments, 148 employees were working in 8 women's clothing establishments, and 17 employees were found in 14 retail stores.

Pending: At the close of the fiscal year 1,684 cases were pending in 90 establishments.

Complaints

(See Table 1.)

Complaints were received from 325 employees stating that they were receiving rates below the minimum to which they were entitled under the various minimum wage orders.

Upon investigation by the Minimum Wage Commission, it was found that the majority of cases, 203 in number, were being paid below the minimum; nine were being illegally paid or were having illegal deductions taken from their pay; while in 113 cases the records of hours were not being properly kept by the employer or he refused to show them to the investigator.

Adjustment: Thirty-six cases had their wages raised to meet the required minimum; in 154 cases adjustment was promised or reported; in 29 cases the complaint was unjustified; by changing the hours, work or method of payment, seven employees were enabled to earn the minimum; four employees were issued special license permits; one employee had left her employment before inspection was made by the Commission; eleven complaints were not covered by any minimum wage order; in four cases the agent of the Commission could not locate the firm and at the close of the fiscal year, six cases are still pending.

In the case of 73 complaints, retroactive wages were collected by the complainants.

Conferences

The Executive Secretary was given authority by the Commissioner of Labor and Industries, and the Minimum Wage Commission to hold conferences in an effort to adjust retroactive wage claims between employers and employees. In addition to these conferences there were numerous interviews and telephone calls regarding adjustments of registered complaints.

As a result of the conferences mentioned ninety percent of the cases were settled without resorting to court action. Twenty-eight thousand, two hundred and fifty-six dollars and five cents were secured in retroactive wages covering the following occupations: Boot and Shoe Cut Stock and Findings, Bread and Bakery Products; Laundry and Dry Cleaning, Men's Clothing and Raincoat, Men's Furnishings, Women's Clothing, Women's and Children's Underwear, Neckwear and Cotton Garments and Retail Stores.

Retroactive Wages

As a result of the complaints received in the Commission's office in connection with their regular inspection work, and also as a result of the figures secured through a special inspection in the clothing trade, retroactive wages were secured in the following occupations:—

Industry	Amount
Boot and Shoe Cut Stock and Findings	$ 476.66
Bread and Bakery Products	83.00
Laundry and Dry Cleaning	256.89
Men's Clothing and Raincoat	13,826.94
Men's Furnishings	856.31
Women's Clothing	349.02
Women's and Children's Underwear, Neckwear and Cotton Garment	9,089.32
Retail Store	3,317.91
	$28,256.05

Summary

A survey of the work and accomplishments of the Commission shows two especially interesting developments during the year:— First, the greatly increased inspection work accomplished by the Commission through its investigators included regular inspection work, reinspections, home workers, and inspections where employees were not covered by any of the Commission's orders, making a total of 107,161 records. This is greatly in excess of the records taken last year. Second:— the marked increase in the amount of retroactive wages collected for underpaid employees. During 1938, $1,343.30 was collected in comparison with $28,256.05 in 1939. The bulk of the retroactive wages were collected from clothing firms as a result of a special investigation.

With the inclusion of four additional wage orders since the last report, it is estimated that approximately 150,000 women and minors are covered by minimum wage orders.

WAGE ORDERS

Knit Goods Occupation
Mandatory Order Number 20

Minimum Fair Wage Standards for Women and Minors Employed in This Occupation

Basic Wage Rates:

No women and no minor employed in the Knit Goods occupation shall be paid less than the following rates:

1. Employees of ordinary ability, not less than 36 cents an hour, after 36 weeks' employment in the industry.
2. Inexperienced employees, not less than 25 cents an hour, for the first 36 weeks' employment in the industry.

Any employee regularly employed for forty (40) hours per week shall be regarded for the purpose of this order as a full-time employee.

Special Provisions:

Piece Rates: The wages paid piece workers shall be so adjusted that every women or minor so employed shall earn for a given period of employment not less than the time wages herein prescribed for such period.

Waiting Time: Time during which employees are required to wait on the employer's premises and no work is provided by the employer, shall be counted as working time and paid for at the individual worker's regular wage rate.

Administrative Regulations

Definitions:

1. *Knit Goods Occupation:*
   The above-named occupation includes all branches of the Knit Goods industry with the exception of staple lines of hosiery and underwear, but this exception shall not apply to lines used for athletic purposes or to staple lines such as bathing suits, tights and infants' garments.
2. *Experienced Employees:*
   Women and minors who have had 36 weeks' or more employment in the industry shall be considered experienced.
3. *Minors:*
   Employees of either sex under 21 years of age.
4. *Employees:*
   Women and minors employed in the Knit Goods occupation.
5. *Mandatory Order:*
   Date effective:—June 2, 1939.

Knit Goods Wage Board

List of Members

Representative of the Public

John W. Morgan, Esq., *Chairman,* 23 Central Avenue, Lynn

Representatives of Employers:	*Representatives of Employees:*
A. Paul Cohen Suffolk Knitting Mills Lowell	Jesse Lane 18 Stuart Street Boston
George K. Gordon Revere Knitting Mills Malden	Miss Winifred Bailey 47 Crescent Road Needham Heights
E. T. Malone Malone Knitting Mills Springfield	Miss Elizabeth Vozella 20 Henley Street Medford

Office and Other Building Cleaners Occupation Directory Order Number 21

Minimum Fair Wage Standards for Women and Minors Employed in This Occupation

Basic Wage Rates:

The minimum rate of wages for female employees and minors in the Office and Other Building Cleaners Occupation shall be not less than 40 cents an hour.

Special Provisions:

Waiting Time: The time which an employee spends on the premises after reporting for work and before he or she is released by the employer or requested to report at any future hour, shall be regarded as waiting time and shall be included in computing total hours worked within the week.

Administrative Regulations

Definitions:

1. *Office and Other Building Cleaners Occupation:*
   The scope of the above-named occupation includes office and other buildings.
2. *Minors:*
   Employees of either sex under 21 years of age.
3. *Employees:*
   Women and minors employed in the Office and Other Building Cleaners occupation.
4. *Directory Order:*
   Date effective:—June 1, 1939.

Office and Other Building Cleaners Wage Board

List of Members

Representative of the Public

Virgil DiGuito, Esq., *Chairman,* 21 Flint Street, Somerville

Representatives of Employers:

Russell Codman, Jr.
Codman & Codman
Boston

Ralph E. Whitney
C. W. Whittier Company
Boston

Robert Huelin
DeBlois & Maddison
Boston

Representatives of Employees:

Mrs. Elizabeth Ryan
38 Neptune Road
East Boston

Robert Everitt
321 Tremont Street
Boston

Mrs. Martha Doherty
40 Elm Street
Charlestown

Jewelry and Related Lines Occupation
Directory Order Number 22

Minimum Fair Wage Standards for Women and Minors Employed in This Occupation

Basic Wage Rates:

No woman and no person under twenty-one years employed in any occupation in the manufacture of jewelry, watches, clocks, silverware, optical goods and related lines as hereinafter defined shall be paid less than the following minimum rates:

A. 33c an hour — August 1, 1939 to July 31, 1940, inclusive.
B. 35c an hour — on and after August 1, 1940, for employees with experience of two months' or over in the industry.
C. 33c an hour — on and after August 1, 1940, for employees having less than two months' experience in the industry; but in no event shall the number of persons employed at less than 35c per hour exceed ten per cent of the average total number of employees employed during the preceding thirty days by the employer.

Special Provisions:

1. *Piece Rates:* The wages paid piece workers shall be so adjusted that every woman or minor so employed shall earn for any period of employment not less than the time wages herein prescribed for such period.
2. *Waiting Time:* Time during which employees are required to wait on the employer's premises and no work is provided by the employer, shall be counted as working time and paid for at the individual worker's regular wage rate.

Administrative Regulations

Definitions:

Jewelry and Related Lines Occupation:
The above-named occupation covers the manufacture of such products as jewelry, jewelry novelties, jewelry findings, whether made of metal, wood, glass, plastic materials or other substances, when such findings are produced for and distributed through the jewelry, silverware or optical industries, silverware, watches, clocks, optical goods, including sun glasses and related lines.

Experienced Employees:
After August 1, 1940, any employee with two months' employment in the industry.

Employees:
Women and minors employed in the jewelry and related lines occupation.

Minors:
Employees of either sex under 21 years of age.

Directory Order:
Date effective:—August 1, 1939.

Jewelry and Related Lines Wage Board

List of Members

Representative of the Public

LaRue Brown, Esq., *Chairman,* 15 State Street, Boston

Representatives of Employers:	*Representatives of Employees:*
Royal Parkinson American Optical Company Southbridge	Thomas F. Dyer 59 Chestnut Street Providence, Rhode Island
Frank E. Nolan Saart Bros. Attleboro	Mrs. Ruth Perry 159 Pleasant Street Attleboro
Joseph Rioux Bliss Bros. Attleboro	Charles F. Smith 79 Tiffany Street Attleboro

Beauty Culture Occupation
Directory Order Number 23

Minimum Fair Wage Standards for Women and Minors Employed in This Occupation

Basic Wage Rates:

No woman and no minor employed in the Beauty Culture occupation shall be paid less than the following rates:

1. *Full Time:*
   A. Hairdressers, not less than $16.50 a week.
   B. Operators, not less than $14.50 a week.
   C. Manicurists, not less than $14.50 a week.
   D. Maids and Appointment Clerks, not less than $14.50 a week.
   E. For the first three months' employment in the industry, not less than $12.50 a week.
   Any week of 48 hours shall be considered a full working week.
2. *Part Time:*
   F. All part time hairdressers shall be paid at the rate of not less than 50c per hour for each hour worked and in no case for less than four consecutive hours in any one day.
   G. All part time operators or manicurists shall be paid at the rate of 40c per hour for each hour worked and in no case for less than four consecutive hours in any one day.
   Part time employees are those who are employed not less than four consecutive hours.

Special Provisions:

Waiting Time: Time during which employees are required to wait on the employer's premises and no work is provided by the employer, shall be counted as working time and paid for at the individual worker's regular wage rate.
Experienced Operators: Any operator who has held an operator's license for a period of one year shall be paid at the rate of $16.50 a week.
Permit Workers: Any unlicensed operator working under a permit issued by the licensing authority shall be considered an operator and shall be paid an operator's wages.
Commission Workers: Any employee working on a strictly commission basis shall be paid pro rata of the minimum wage to which she is entitled under her specific classification group, for a day of eight hours or a working week of forty-eight hours.
Equipment: Sissors, cuticle cutters, hand clippers, eyebrow tweezers and marcel irons shall be furnished by the employees. All other supplies and equipment necessary for the performance of any service of any branch of the beauty culture industry shall be furnished by the employer.
Tips: Tips are not to be construed as part of the weekly wage.

Administrative Regulations

Definitions:

1. *Beauty Culture Occupation:* This occupation includes all service or operations used or useful in the care, cleansing or beautification of the skin, nails or hair, or in the enhancement of personal appearance, and also services or operations incidental to such care, cleansing, beautification or enhancement, as in the General Laws pertaining to Hairdressers, Chapter 428, Acts of 1935, amended in 1936 and 1937.
2. *Hairdresser:* A person registered as a hairdresser with the Board of Registration of Hairdressers, engaged in hairdressing or in any of the branches of beauty culture service.
3. *Operator:* A person registered with the Board of Registration of Hairdressers and engaged in hairdressing or in any of the branches of beauty culture service *under the supervision of a registered hairdresser.*
4. *Manicurist:* A person registered as a manicurist with the Board of Registration of Hairdressers and performing no other service of beauty culture than manicuring.
5. *Maid and Appointment Clerk:* A person employed as a maid or appointment clerk in a beauty culture establishment.
6. *Employees:* Women and minors employed in the beauty culture occupation.
7. *Minors:* Employees of either sex under twenty-one years of age.
8. *Directory Order:* Date effective:—September 1, 1939.

Beauty Culture Wage Board

List of Members

Representative of the Public

John P. A'Hearn, *Chairman,* 38 Weston Street, Brockton

Representatives of Employers:

Miss Alice Rose Cyr
Olympia Building
Brockton

Mrs. Lottie H. Harriman
31 Bank Street
North Adams

Lawrence D'Angelo
26 West Street
Boston

Representatives of Employees:

Miss Esther L. Callahan
31 Central Street
Waltham

Miss Ada Harriman
92 Capen Street
Milton

Miss Saima Holmes
5 Pleasant Street
Worcester

Table 1.—Situation and Disposition of Complaints received During the Fiscal Year ending November 30, 1939.

(C = Number of Cases [employees])

Industry	Number of Complaints	Type of Complaint: Received below Minimum Rate	Illegal Method of Payment or Deduction	No Record of Hours Kept or Refusal to Show Records	Wages Raised	Disposition of Cases: Adjustment Reported or Promised	Settled in Full Retroactive Wages	Complaint not Justified	Change of Work, Hours or Method of Payment	Could not Locate Firm	Special License	Left, Laid off or Discharged	Not Under any Order	Pending
	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Boot and shoe cut stock and findings	42	8	—	34	—	39	3	—	—	—	—	—	—	—
Bread and bakery products	11	11	—	—	—	7	2	2	—	—	—	—	—	—
Canning and preserving, minor lines of confectionery and food preparations	10	10	—	—	—	10	—	—	—	—	—	—	—	—
Electrical equipment and supplies	2	2	—	—	—	—	—	—	—	—	—	—	—	2
Jewelry and related lines	1	—	—	1	—	—	—	—	—	—	—	—	—	1
Knit goods	2	2	—	—	—	—	—	2	—	—	—	—	—	—
Laundry and dry cleaning	58	32	3	23	29	22	1	6	—	—	—	—	—	—
Men's clothing and raincoat	14	13	—	1	—	8	5	1	—	—	—	—	—	—
Men's furnishings	12	12	—	—	—	2	9	—	—	1	—	—	—	—
Millinery	21	4	—	17	—	17	—	4	—	—	—	—	—	—
Office and other bldg. cleaners	1	1	—	—	—	—	—	1	—	—	—	—	—	—
Paper box	3	3	—	—	—	2	—	1	—	—	—	—	—	—
Pocketbook and leather goods	2	2	—	—	—	2	—	—	—	—	—	—	—	—
Retail stores	107	68	6	33	5	32	50	7	6	3	—	1	—	3
Stationery goods and envelopes	11	11	—	—	—	11	—	—	—	—	—	—	—	—
Women's clothing	11	7	—	4	2	2	3	4	—	—	—	—	—	—
Women's and children underwear, neckwear, cotton garment	6	6	—	—	—	—	—	1	1	—	4	—	—	—
Not under any order	11	11	—	—	—	—	—	—	—	—	—	—	11	—
Total	325	203	9	113	36	154	73	29	7	4	4	1	11	6

Table 2.—Disposition of Cases of Non-Compliance Pending from Previous Year, 1938.

Disposition	Boot and Shoe Cut Stock and Findings		Bread and Bakery Products		Candy		Canning and Preserving, Minor Lines of Confectionery and Food Preparations		Corset		Druggists' Preparations, Proprietary Medicines and Chemical Compounds		Electrical Equipment and Supplies		Jewelry and Related Lines		Laundry and Dry Cleaning		Men's Clothing and Raincoats		Men's Furnishings	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Cases Pending from Previous Years	78	12	10	4	1	1	22	2	1	1	5	2	2	1	12	4	12	9	342	11	282	6
Adjustments																						
Wages raised	25	5	2	2	1	1	—	—	1	1	—	—	—	—	—	—	5	4	109	6	23	3
Adjustment promised or reported	7	3	2	2	—	—	—	—	—	—	3	1	2	1	—	—	5	3	79	3	225	1
Left, laid off or discharged	20	7	6	3	—	—	—	—	—	—	2	1	—	—	—	—	1	1	55	4	31	5
Change of work, hours or method of payment	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	1	2	1
Incorrectly recorded	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Covered by piece rating ruling	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Paid retroactive wages	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	77	2	—	—
Absorbed by Directory or Mandatory Order	—	—	—	—	—	—	22	2	—	—	—	—	—	—	12	4	—	—	—	—	—	—
Special License type	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Firm out of business	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pending	22	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	2	1	—	—

Table 2.—Disposition of Cases of Non-Compliance Pending from Previous Year, 1938—Continued.

Disposition	Millinery		Office and Other Building Cleaners		Paper Box		Pocketbook and Leather Goods		Retail Stores		Women's and Children's Underwear, Neckwear and Cotton Garments		Women's Clothing		Total	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Cases Pending from Previous Years	14	1	70	2	74	3	195	7	46	12	1,302	14	18	4	2,486	96
Adjustments																
Wages raised	—	—	—	—	—	—	1	1	33	3	310	7	7	1	517	34
Adjustment promised or reported	—	—	—	—	—	—	91	2	2	2	—	—	4	2	420	20
Left, laid off or discharged	—	—	—	—	—	—	—	—	1	1	231	8	1	1	348	31
Change of work, hours or method of payment	—	—	—	—	—	—	—	—	—	—	19	2	—	—	43	5
Incorrectly recorded	—	—	—	—	—	—	—	—	2	2	—	—	—	—	3	3
Covered by piece rating ruling	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Paid retroactive wages	—	—	—	—	—	—	—	—	1	1	725	6	—	—	804	10
Absorbed by Directory or Mandatory Order	14	1	70	2	74	3	—	—	—	—	—	—	—	—	192	12
Special License type	—	—	—	—	—	—	—	—	—	—	2	1	—	—	2	1
Firm out of business	—	—	—	—	—	—	—	—	5	2	—	—	6	1	11	3
Pending	—	—	—	—	—	—	103	5	2	2	15	2	—	—	145	15

Table 3.—Disposition of New Cases in Firms Where Cases Were Pending From Previous Year.

Situation and Disposition of Cases	Boot and Shoe Cut Stock and Findings		Men's Clothing and Raincoats		Pocketbook and Leather Goods		Women's and Children's Underwear, Neckwear, and Cotton Garments		Total	
	C	E	C	E	C	E	C	E	C	E
Cases of Non-compliance .	49	4	14	3	245	2	38	4	346	13
ADJUSTMENT										
Wages raised . . .	14	1	1	1	—	—	25	2	40	4
Adjustment promised or reported	21	4	—	—	240	1	—	—	261	5
Left, laid-off or discharged .	14	1	13	2	—	—	12	3	39	5
Special License Permit .	—	—	—	—	—	—	1	1	1	1
PENDING	—	—	—	—	5	1	—	—	5	1

Table 4.—Summary of Adjustments in Connection with Regular Inspections in 1939 Minimum Wage Orders

	Boot and Shoe Cut Stock and Findings[1]		Bread and Bakery Products[1]		Brush		Candy[1]		Canning and Preserving, Minor Lines of Confectionery and Food Preparations[1]		Corset[1]		Druggists' Preparations Proprietary Medicines Chemical Compounds[1]		Electrical Equipment and Supplies[1]		Knit Goods[1]		Laundry and Dry Cleaning[1]		Men's Clothing and Raincoats	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Records for Tabulation	1,247	63	1,428	66	475	11	2,229	50	281	19	368	9	638	39	1,552	9	2,254	34	2,148	251	3,869	61
Cases of Non-compliance	147	25	34	14	3	1	12	4	31	6	22	3	11	4	369	8	200	16	159	80	764	38
ADJUSTMENT																						
Wages raised	44	13	12	3	1	1	5	2	10	1	1	1	1	1	252	2	7	2	24	14	29	7
Adjustment promised or reported	48	8	7	5	—	—	4	2	21	5	21	2	6	1	20	4	100	10	110	54	79	14
Left, laid-off, or discharged	44	11	5	3	—	—	3	1	—	—	—	—	—	—	30	1	1	1	10	6	26	8
Change of work, hours, or method of payment	3	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	2	14	3
Incorrectly recorded	1	1	6	2	2	1	—	—	—	—	—	—	—	—	2	1	—	—	1	1	27	3
Firm out of business	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	1	—	—	—	—
Special license type	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Covered by piece rate ruling	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—
Retroactive wage payment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	373	5
Technical non-compliance	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pending	6	4	3	3	—	—	—	—	—	—	—	—	4	2	65	2	87	4	11	7	215	6

Table 4.—Summary of Adjustments in Connection with Regular Inspections in 1939 Minimum Wage Orders—Continued.

	Men's Furnishings [1]		Millinery[1]		Office and other Building Cleaners[1]		Paper Box[1]		Pocketbook and Leather Goods[1]		Retail Stores[1]		Stationery Goods and Envelopes[1]		Toys and Games and Sporting Goods[1]		Women's and Children's Underwear, Neckwear, and Cotton Garments[1]		Women's Clothing[1]		Total	
	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.	C.	E.
Records for Tabulation	1,035	24	1,831	23	160	50	1,782	90	881	36	8,896	1,251	2,610	42	1,317	29	4,984	88	2,462	92	42,447	2,337
Cases of Non-compliance	746	21	72	13	14	7	65	21	490	13	810	313	53	11	297	5	2,620	38	403	46	7,322	687
ADJUSTMENT																						
Wages raised	25	6	22	4	2	2	9	6	7	2	97	72	9	4	—	—	150	9	54	16	761	168
Adjustment promised or reported	44	8	48	7	2	2	44	13	190	9	556	166	17	4	17	3	111	10	90	18	1,535	345
Left, laid-off, or discharged	7	3	—	—	—	—	4	3	—	—	63	46	—	—	—	—	73	12	24	8	290	103
Change of work, hours, or method of payment	—	—	—	—	2	1	—	—	—	—	11	9	—	—	—	—	—	—	3	2	37	19
Incorrectly recorded	—	—	—	—	—	—	—	—	—	—	8	4	4	1	—	—	—	—	1	1	52	15
Firm out of business	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	31	1	35	2
Special license type	1	1	1	1	—	—	1	1	—	—	4	4	—	—	—	—	9	5	1	1	19	15
Covered by piece rate ruling	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Retroactive wage payment	248	4	—	—	—	—	—	—	—	—	17	14	—	—	—	—	2,121	18	148	8	2,907	49
Technical non-compliance	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	1	1
Pending	421	3	1	1	8	3	7	4	293	3	53	31	23	2	280	2	156	7	51	6	1,684	90

[1] Inspection initiated previous year.

REPORT OF THE DIVISION OF STATISTICS

Roswell F. Phelps, *Director*

Introduction

This report is the twentieth annual report of the Division of Statistics and covers the work of the division during the year 1939. The principal branches of the work of the division are the collection and publication of statistics of labor and manufactures and the answering of inquiries relative to the industries of the commonwealth, the rates of wages, hours of labor, and the conditions of employment. These several branches of the work of the division during the year 1939 are discussed in this report.

The statistical data herein presented relate for the most part to the calendar year 1939, but data for certain prior years are also included for purposes of comparison, and charts showing, graphically, the trends of employment and earnings of wage-earners in the principal industries and municipalities in the commonwealth appear in the appendix. The results of the monthly surveys of employment and payrolls, the annual census of manufactures and of special investigations made by the division are here presented in summary form. Information in greater detail has been presented in separate printed reports and in numerous mimeographed press releases to which reference is made later in this report.

In addition to its regular work during the past year, the division made several special investigations, four of which are discussed in the section entitled "Special Investigations" on pages 61 and 62.

The division has also been called upon to furnish much information for the use of various private and governmental agencies and individuals and to answer numerous inquiries with reference to industrial changes which have occurred during recent years. In many cases special tabulations of the original records already available in the files of the division were made in order to supply the information desired. A statement relative to such inquiries appears in the section entitled "Information Service" on pages 63 and 64.

INDUSTRIAL TRENDS IN MASSACHUSETTS, 1925-1939

In discussing the industrial changes in Massachusetts, which have occurred during the period of 15 years (1925-1939) covered by this review, reference is made to the *manufacturing industries only*, but, because of the predominance of the manufacturing industries in this state, nearly all other classes of business are largely dependant upon activity in the manufacturing industries.

In the following table data are presented for the years 1925-1939, inclusive, showing the average number of wage-earners employed in the manufacturing industries in the commonwealth, the amount paid in wages, the average annual earnings of those employed, the *real* value of their annual earnings, and the cost of living in Massachusetts, based on wage-earners' budgets. Corresponding index numbers for each of these items are also presented in the table. These index numbers have been computed, using as a base (100) the averages of the respective items for the three years, 1925-1927. The trends are shown, graphically, on the accompanying chart.

Employment. On reference to Table 1 and the accompanying chart, it will be observed that in 1939 the estimated number of wage-earners employed in the manufacturing industries in Massachusetts was 465,334, which was greater by 40,177, or 9.4 per cent, than the number, 425,157, reported as employed in the manufacturing industries in 1938. The increase noted shows the effect of the recovery from the "recession," which began toward the close of 1937 and continued through the greater part of 1938.

The estimated average number of wage-earners employed in the manufacturing industries in 1939 (465,334) exceeded the number employed (350,521) in 1932 (the worst year of the depression) by 114,813, or 32.8 per cent, but was less by 125,282, or 21.2 per cent, than the average number employed (590,616) during the three-year base period, 1925-1927 (a period of normal activity). The corresponding index numbers representing employment were: 78.8 in 1939; 72.0 in 1938; and 59.3 in 1932 (the lowest recorded during the entire period, 1925-1939).

Table 1.—Industrial Trends in Massachusetts, 1925-1939.

(Base—Average for three years, 1925-1927=100)

Years	Annual Statistics of Manufactures in Massachusetts			Index Numbers [2]				
	Average Number of Wage-Earners Employed [1]	Amount Paid in Wages During the Year [1]	Average Annual Earnings of Wage-Earners [1]	Average Number of Wage-Earners Employed [1]	Amount Paid in Wages during the Year [1]	Average Annual Earnings of Wage-Earners [1]	Cost of Living [3]	Real Value of Average Annual Earnings
Base [2]	590,616	$720,097,884	$1,219.23	100.0	100.0	100.0	100.0	100.0
1925	591,438	716,155,593	1,210.87	100.1	99.5	99.3	100.9	98.4
1926	602,343	738,208,510	1,225.56	102.0	102.5	100.5	100.7	99.8
1927	578,068	705,929,549	1,221.19	97.9	98.0	100.2	98.3	101.9
1928	540,927	670,063,291	1,238.73	91.6	93.1	101.6	98.6	103.0
1929	557,494	694,805,312	1,246.30	94.4	96.5	102.2	99.2	103.0
1930	481,449	573,838,044	1,191.90	81.5	79.7	97.8	95.7	102.2
1931	434,441	474,189,202	1,091.49	73.6	65.9	89.5	87.2	102.6
1932	350,521	334,358,550	953.89	59.3	46.4	78.2	78.8	99.2
1933	398,592	354,523,634	889.44	67.5	49.2	73.0	76.3	95.7
1934	423,933	408,617,489	963.87	71.8	56.7	79.1	81.8	96.7
1935	445,519	448,326,676	1,006.30	75.4	62.3	82.5	85.3	96.7
1936	481,432	514,599,251	1,068.89	81.5	71.5	87.7	85.0	103.2
1937	498,602	559,246,370	1,121.63	84.4	77.7	92.0	88.2	104.3
1938 [4]	425,157	453,940,826	1,067.70	72.0	63.0	87.6	86.5	101.3
1939 [5]	465,334	523,439,166	1,124.87	78.8	72.7	92.3	85.5	108.0

[1] Compiled from reports of the Annual Census of Manufactures in Massachusetts for the years 1925 to 1938.

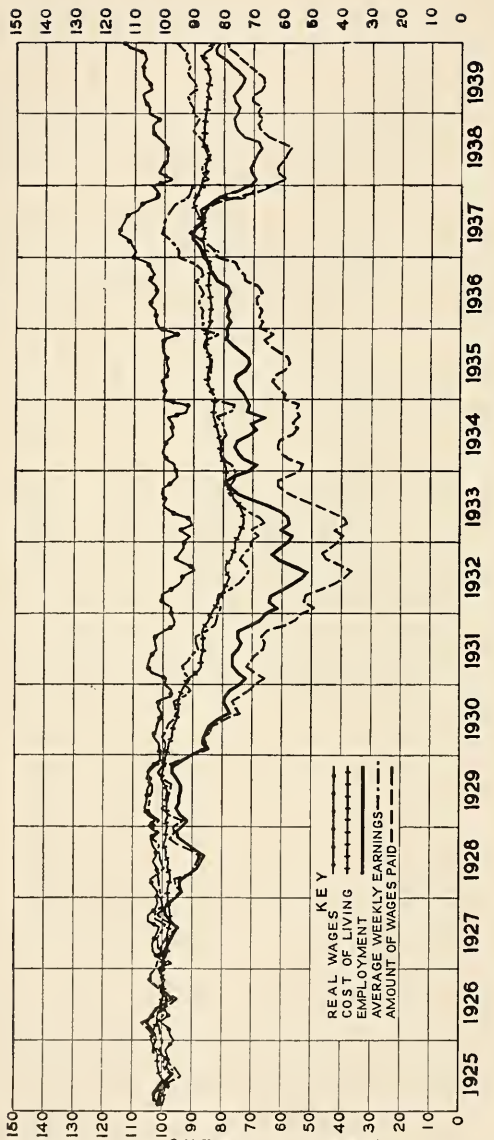
[2] In computing the index numbers, the average for the three years, 1925, 1926, and 1927, was taken as the base (100) in each case.

[3] Compiled from reports of the Division on the Necessaries of Life.

[4] Since the publication of the report for 1938, the final results of the annual census of manufactures in Massachusetts for the year 1938 have become available and are here substituted for the estimates published in that report.

[5] Estimates based on results of "Monthly Surveys of Employment and Earnings in Representative Manufacturing Establishments," by the Division of Statistics.

TRENDS OF EMPLOYMENT, EARNINGS AND REAL WAGES IN MANUFACTURING INDUSTRIES, AND COST OF LIVING IN MASSACHUSETTS, BY MONTHS, 1925-1939.



The Wage Fund. In 1939 the total estimated amount of wages paid to wage-earners employed in all manufacturing establishments in the State was $523,439,166, which was greater by $69,498,340, or 15.3 per cent, than the amount ($453,940,826) paid in 1938, and also exceeded by $189,080,616, or 56.6 per cent, the amount ($334,358,550) paid in 1932, but was less by $196,658,718, or 27.3 per cent, than the average amount paid ($720,097,884) during the three-year base period, 1925-1927). The corresponding index numbers representing the amounts paid in wages were: 72.7 in 1939; 63.0 in 1938; and 46.4 in 1932.

On reference to the accompanying chart it will be observed that early in 1930 the trend line representing the amounts paid in wages fell below the trend line representing the number of wage-earners employed and that the distance between the two lines increased until early in 1933, but, thereafter, as activity in the manufacturing industries increased, the *upward trend* of the line representing the amounts paid in wages was more pronounced than that of the line representing the numbers of wage-earners employed. This was due to the fact that, during the period of increasing activity, there were increases not only in the numbers of persons employed, but also in the numbers of hours worked by many of those employed and some increases in the rates of wages paid per unit of time worked. In 1939 the two lines converged and actually met at the close of the year.

Annual Earnings of Employees. During the period of 15 years, 1925 to 1939, the average annual earnings of wage-earners employed in the manufacturing industries in Massachusetts showed marked fluctuations. The highest average recorded during the period was $1,246.30 in 1929, and the lowest was $889.44 in 1933. Since 1933 the average annual earnings have increased each year, except in 1938, when there was a decrease. In 1939 the average was $1,124.87, which exceeded the average ($1,067.70) in 1938 by $57.17, or 5.4 per cent, and exceeded the average ($889.44) in 1933 by $235.43, or 26.5 per cent, but was less by $94.36, or 7.7 per cent, than the average ($1,219.23) for the three-year base period, 1925-1927. The corresponding index numbers representing the average annual earnings of wage-earners were: 92.3 in 1939; 87.6 in 1938; and 73.0 in 1932.

Cost of Living. In computing the index numbers representing the cost of living (presented in Table 1) the average of the index numbers for the three years, 1925 to 1927, has been taken as the base (100), whereas the Division on the Necessaries of Life, in computing the orginal series, has adopted 1913 as the base year. During the first five years of the period of 15 years under review, the changes in the cost of living were relatively small, but during the four years, 1930 to 1933, inclusive, there were rather marked decreases, and in 1933 the lowest point (76.3) during the entire period was reached. Since 1933 the general trend was upward, reaching 88.2 in 1937, but in 1938 the index number fell to 86.5, and in 1939 there was a further decrease to 85.5. These changes in the cost of living indicate the effects of the depression and recovery on the prices of commodities included in the wage-earners' budget.

Real Wages. The *real* value, or purchasing power, of the average annual earnings of those employed in each year has been computed by dividing the index number representing the average annual earnings of those employed by the corresponding index number representing the cost of living in that year. During the years, 1927 to 1931, the real value of the average annual earnings of *those employed,* was somewhat greater than during the three-year period, 1925-1927, taken as the base (100). In 1933, the index number fell to 95.7 (the lowest point reached during the entire period, 1925-1939), but since 1933 the trend has been upward except in 1938 when there was a decrease. In 1939 the index number was 108.0, the highest point reached in any year during the entire period of 15 years.

STATISTICS OF LABOR

Labor Bulletins

Labor Bulletin No. 180. Thirty-eighth Annual Directory of Labor Organizations in Massachusetts, 1939 (with Statistics of Membership, 1935-1939).—This directory contains, as in previous editions, the name, location, time and place of meeting, and the name and address of the secretary and business agent of each local labor organization having its headquarters in Massachusetts, together with a list of all the delegate organizations, such as state and district councils, central labor unions, etc., and the names and home office address with the name of the secretary of each national and international labor organization known to be in existence in the United States. The number of organizations listed in this directory was 1,950, of which number 172 were national and international organizations, 163 were delegate organizations, and 1,615 were local trade unions.

The statistical data presented in the directory had reference to the number and membership of local unions which were in existence in Massachusetts as of January 15 in each of the years 1935-1939. Earlier editions contained data for prior years. Membership statistics were first collected annually beginning with the year 1908. The tabulations do not include unions of letter carriers, post office clerks, or railway mail clerks. Excluding such organizations, there was at the beginning of 1939 a total of 1,434 local unions with a combined membership of 295,866, comprising 238,444 males and 57,422 females.

Labor Bulletin No. 181. Time Rates of Wages and Hours of Labor in Massachusetts, 1939.—This is the thirtieth of a series of annual reports of a similar nature, the first of which was issued by the former Bureau of Statistics in 1910. In the earlier reports of this series nearly all of the information was obtained from officials of labor organizations and had reference to rates paid as a result of agreements between employers and union employees. Numerous requests for other than strictly union rates resulted in additional information being obtained from employers such as street and electric railway companies, and from municipalities, in order that rates paid various classes of workmen and laborers might be more readily compared. Since 1924 the reports have been issued under the title "Time Rates", rather than "Union Rates", as formerly.

The report comprises three sections, the first devoted to union rates effective throughout the state in all types of organized industries and trades, the second section to municipal rates, and the third section to rates paid by several classes of public utility companies, many of whose employees are members of labor organizations and have definite agreements with their employers.

Monthly Surveys

Introductory.—The "monthly surveys of employment and earnings of wage-earners in Massachusetts" were first undertaken in September 1922, when reports were received from only 202 manufacturing establishments in which 120,804 wage-earners were employed. During the course of years these surveys have been greatly expanded so as to include, since 1931, all important fields of employment in this state. In December, 1939, reports were received from 7,611 establishments in which 502,499 wage-earners were employed. It is believed that the reports received each month furnish truly representative samples, covering, as they do in most instances, approximately 55 per cent of the total number of wage-earners employed in all important industries and branches of business.

All schedules, except "central office" returns covering branches of establishments whose headquarters are outside of Massachusetts, are obtained directly by the Division of Statistics. The Federal Bureau of Labor Statistics grants the use of the franking privilege in connection with the collection of

reports used jointly by the two agencies. There were no important changes in any questionnaires used during the year. Two employees who were formerly assigned to Massachusetts to make the tabulations desired by the Federal Bureau, were transferred to Washington where a new method of tabulating State returns was put into effect. Since their transfer, the original schedules have been forwarded each month for use of the Federal Bureau, in its tabulation of data on a national basis.

Coverage of the Surveys.—In Table 2 data are presented showing, for each industrial group covered by the surveys, the year and month in which the surveys were first undertaken and (as of December, 1939) the number of establishments, number of wage-earners covered, the total amount paid them in wages in one week, and the approximate size of the sample, expressed in percentages of the total number of persons in the respective industrial groups according to the most recent census data available.

The estimated coverage for all groups is 55.0 per cent; for manufacturing, 60.0 per cent; and for wholesale and retail trade, 55.0 per cent. Public utility companies, which are few in number but cover a wide field of operations, have the largest relative showing,—95.0 per cent. The representation in the construction industry is only 35 per cent, but the 700 contractors who reported in December would in normal times employ possibly 80 per cent of the building tradesmen in the state. The municipalities from which reports are received include all of the 39 cities and nearly all of the large towns. The other classes of employment covered are not individually very important, but together they include more than 39,000 employees and are included in order that the surveys may more fully represent all employment in the commonwealth.

Table 2.—Coverage of Monthly Surveys of Employment and Earnings of Wage-Earners in Representative Establishments in Massachusetts in December, 1939: By Industrial Groups.

Industrial Groups	Survey First Undertaken		Number of Establishments Covered	Number of Wage earners Covered	Amount of Wages Paid to Wage-earners Covered (one week)	Approximate Size of Sample (Percentage)[1]
	Month	Year				
Manufacturing	**Sept.**	**1922**	**1,800**	**291,574**	**$6,800,903**	**60.0**
Wholesale and Retail Trade	**Nov.**	**1929**	**3,985**	**100,302**	**2,138,465**	**55.0**
Wholesale trade	Aug.	1931[2]	714	17,159	510,284	35.0
Retail trade	Aug.	1931[2]	3,271	83,143	1,628,181	60.0
Public Utilities	**Jan.**	**1929**	**112**	**44,979**	**1,529,904**	**95.0**
Steam railroads	Jan.	1929	6	20,461	681,468	100.0
Street and electric railways	Jan.	1929	7	9,021	336,793	95.0
Passenger bus companies	Apr.	1931	27	1,255	36,993	90.0
Gas and electric companies	Jan.	1929	72	14,242	474,650	95.0
Construction	**Apr.**	**1927**	**700**	**8,382**	**248,345**	**35.0**
Building construction	Apr.	1927	656	6,692	200,118	25.0
Highway construction	June	1931[2]	25	619	17,705	90.0
Heavy construction[3]	Jan.	1937[2]	19	1,071	30,522	25.0
Municipal Employment	**Apr.**	**1931**	**97**	**19,103**	**512,977**	**70.0**
Miscellaneous Classes	**Mar.**	**1931**	**930**	**39,080**	**837,628**	**45.0**
Agricultural employment	Sept.	1931	33	723	13,057	10.0
Banks and trust companies	Mar.	1931	145	3,490	101,784	40.0
Brokerage companies	Feb.	1939	26	881	29,086	35.0
Clubs and associations	Mar.	1931	22	1,140	18,672	60.0
Dyers and cleansers	Mar.	1932	79	2,113	36,429	90.0
Express and transfer companies	Mar.	1931	26	782	23,683	60.0
General trucking and stevedoring	Mar.	1931	56	3,065	91,294	60.0
Hospitals	Mar.	1931	29	4,242	69,568	25.0
Hotel restaurants	Jan.	1932[2]	24[4]	2,175	29,316	75.0
Hotel service	Mar.	1931[2]	62[4]	4,173	63,680	60.0
Insurance companies and agencies	Mar.	1931	72	4,055	111,051	30.0
Laundries	Mar.	1931	146	6,064	107,765	60.0
Quarrying and non-metallic mining	July	1937	10	218	5,288	50.0
Schools and colleges	Mar.	1931	21	1,841	42,240	50.0
Theatres	Mar.	1931	119	3,068	67,056	60.0
All other classes	Mar.	1931	60	1,050	27,659	20.0
Totals	—	—	7,624	503,420	$12,068,222	—
Less duplication[5]	—	—	13	921	29,643	—
All Industrial Groups Combined			**7,611**	**502,499**	**$12,038,579**	**55.0**

[1] Based on the average number employed as shown by census data.
[2] Group sub-divided beginning with returns for the date shown.
[3] This group includes railroad projects and bridges, drainage, water-supply, and power development, marine work, etc.
[4] Of the 62 hotels reporting, 24 operated restaurants.
[5] The manufacture of gas by public utility companies is included under "Manufacturing" as well as under Public Utilities—Gas and electric companies.

Manufacturing.—In 1939 the number of establishments from which reports were received each month was increased only slightly, but reports from a small number of establishments, which formerly did not report, were added to the list, in order to replace those for companies which had ceased to operate, or for other reasons were dropped from the list. An additional number of reports from establishments in several industries and cities were also secured, in order to maintain a true representation of all manufacturing establishments in the State.

This monthly survey has made it possible to determine, shortly after the close of each month, the trend of employment and pay rolls during that month in each of the principal manufacturing industries and cities in the state. The results of the survey are summarized in mimeographed press announcements, which are issued usually within 20 days after the close of the month to which they relate.

The announcements show, for 38 principal industries and 16 leading industrial cities, the number of establishments reporting for the pay-roll week including the 15th of the current and preceding months, the number of wage-earners employed, the amount of the weekly pay rolls, and the average weekly earnings of those employed. In addition to the text and detailed tables there is included

in each issue a chart showing the trends of employment and total amount paid in wages in all manufacturing establishments combined. In December, 1939, the number of establishments from which reports were received was 1,800, or about 20 per cent of the total number of establishments engaged in manufacturing in Massachusetts according to the annual census of manufactures, taken by the division in 1938, and the number of wage-earners covered was 291,574, or about 60 per cent of the average number actually employed in all manufacturing establishments in the State.

Because of limited space, the results of the surveys are presented in this report in summary form only. The press announcements which are issued each month include the data in considerable detail. In this section of the report three series of index numbers are presented. One of these relates to employment of wage-earners, and the second to the amounts paid in wages in all manufacturing industries as a group, and in each of 20 leading industries in the State, by months, in 1939, with averages for each of the three years, 1939, 1938, and 1937. (See Table 3). The third series consists of corresponding index numbers for all manufacturing industries in each of 16 of the leading industrial cities. (See Table 4). The trends of employment and amounts paid in wages in the leading industries and cities are shown, graphically, by months, in a series of charts which appear in the appendix to this report. In 1939, employment in the 20 leading industries was generally greater during the last quarter, and the least employment occurred mostly during the first half of the year. Six of the 20 leading industries are considered seasonal and, with the exception of the confectionery industry which has one very high peak of employment in the fall, usually have two distinct cycles of employment in a given year, one during each half of the year.

Table 3A.—Index Numbers of Employment and Amounts Paid in Wages in Manufacturing Establishments in Massachusetts, All Industries Combined and Twenty Leading Industries: By Months in 1939, and by Years, 1939, 1938, and 1937.

Source:—Monthly Survey of Representative Manufacturing Establishments, 1937, 1938, and 1939)

Industries	Average Number of Wage-earners[1]	Index Numbers: 1939, by Months												Annual Index Numbers		
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	1938	1937
								Employment								
All Industries Combined	**590,616**	**73.0**	**74.6**	**74.8**	**73.1**	**71.7**	**71.2**	**73.3**	**75.5**	**76.8**	**80.2**	**80.5**	**79.6**	**75.4**	**68.9**	**85.2**
Cotton goods	92,841	37.6	37.9	38.0	36.8	35.6	33.4	35.1	34.2	37.2	40.6	42.1	41.8	37.5	33.3	46.5
Boots and shoes	57,710	68.5	74.8	75.6	75.1	64.4	59.6	70.0	73.8	69.4	65.5	57.9	54.6	67.4	70.1	78.7
Woolen and worsted goods	53,526	89.7	85.9	82.0	73.6	78.6	80.1	83.3	84.2	80.3	90.4	93.9	92.8	84.6	68.8	88.2
Electrical machinery, apparatus, and supplies[2]	22,092	73.6	77.5	80.8	82.3	82.2	81.9	79.3	83.1	84.5	87.2	92.1	97.5	83.5	72.4	121.1
Foundry and machine-shop products	19,953	72.7	73.6	74.5	74.8	75.6	75.7	76.1	77.1	78.1	82.4	85.2	85.4	77.6	74.0	87.1
Dyeing and finishing textiles	13,823	78.4	80.1	78.3	76.5	75.5	60.1	69.2	73.1	74.3	79.3	78.1	80.2	75.3	74.2	88.6
Paper and wood pulp	12,829	76.9	76.8	77.2	77.0	75.9	73.8	74.7	75.1	77.7	80.7	82.4	82.8	77.6	74.5	81.2
Textile machinery and parts	12,773	65.3	66.1	65.6	66.6	67.3	71.1	76.0	77.3	76.9	80.4	87.8	89.3	74.1	62.5	91.9
Rubber footwear	12,081	48.8	48.7	49.1	47.2	47.1	46.2	47.7	49.2	50.7	51.1	49.5	49.4	48.7	44.7	54.2
Rubber goods, tires, and inner tubes	10,516	70.6	70.0	72.6	74.9	72.4	72.5	74.0	73.2	75.1	80.1	82.2	81.0	74.9	61.2	74.9
Leather tanned, curried, and finished	10,482	92.2	98.1	95.7	90.8	87.3	93.2	96.2	93.8	96.6	99.4	95.3	94.9	94.5	83.2	98.7
Hosiery and knit goods	10,100	66.8	68.9	67.8	65.3	65.3	64.9	64.2	65.1	67.8	67.7	67.1	59.1	65.8	68.1	92.7
Clothing, men's[3]	9,543	121.7	133.9	136.4	134.3	130.9	134.8	144.1	147.7	146.6	146.2	135.0	143.6	137.9	121.4	138.5
Printing, book and job	9,095	89.4	89.4	87.6	87.5	87.7	88.0	86.5	86.4	89.7	89.9	89.1	90.2	88.5	90.7	94.2
Bread and other bakery products	8,533	142.4	137.0	139.0	137.7	139.4	142.9	145.9	144.4	144.9	144.0	144.0	140.2	141.8	142.9	148.5
Confectionery	8,123	69.8	64.9	63.7	60.3	60.2	58.3	40.4	67.2	78.7	83.1	83.2	81.3	67.6	70.2	76.4
Furniture[4]	8,177	78.9	81.2	80.9	78.1	77.9	76.7	77.6	80.1	80.1	84.6	83.6	81.0	80.1	78.7	93.1
Boot and shoe cut stock and findings	7,520	98.5	104.4	103.2	99.2	90.7	93.1	99.5	97.2	97.1	97.9	94.3	93.5	97.4	94.8	101.8
Silk and rayon goods	6,804	119.9	111.4	111.4	109.8	94.7	87.0	87.5	89.8	94.2	98.8	100.8	95.9	100.1	120.3	202.5
Clothing, women's[5]	6,255	183.7	195.1	201.1	196.5	190.3	188.1	186.7	202.3	208.2	208.5	203.2	199.7	197.0	181.4	180.5

[1] The averages for the three years, 1925, 1926 and 1927 were taken as the base (100) in computing the index numbers presented in this table. [2] Excluding radios.
[3] Includes men's, youths' and boys' clothing; work clothing; furnishing goods; shirts and nightwear; and suspenders. [4] Including store and office fixtures.
[5] Includes corsets and allied garments.

Table 3B.—Index Numbers of Employment and Amounts Paid in Wages in Manufacturing Establishments in Massachusetts, All Industries Combined and Twenty Leading Industries: By Months in 1939, and by Years, 1939, 1938, and 1937.

(Source:—Monthly Survey of Representative Manufacturing Establishments, 1937, 1938, and 1939)

Industries	Average Amounts Paid in Wages per Week[1]	Index Numbers: 1939, by Months												Annual Index Numbers		
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	1938	1937
		Amounts Paid in Wages														
All Industries Combined	**$13,810,429**	**68.3**	**70.9**	**71.2**	**68.2**	**67.0**	**67.5**	**70.1**	**72.1**	**74.2**	**77.4**	**78.9**	**79.6**	**72.1**	**62.5**	**82.4**
Cotton goods	1,718,193	35.0	35.3	35.3	33.3	31.3	30.0	32.5	31.0	35.3	37.8	42.0	41.9	35.1	28.9	43.6
Boots and shoes	1,286,395	51.5	61.5	63.3	56.6	42.9	35.2	47.0	51.1	44.9	39.9	34.0	33.0	46.7	50.0	61.4
Woolen and worsted goods	1,182,160	77.5	73.2	67.2	58.9	65.0	68.1	71.0	70.3	67.1	79.2	82.4	80.3	71.7	58.1	83.0
Electrical machinery, apparatus and supplies[2]	612,896	74.9	79.0	83.4	85.3	85.6	85.6	84.6	87.9	88.9	93.5	99.5	110.0	88.2	68.0	126.3
Foundry and machine-shop products	574,274	71.5	76.6	77.0	79.7	80.7	81.8	81.5	81.7	85.7	90.7	95.5	97.0	83.3	70.2	93.1
Dyeing and finishing textiles	308,794	71.1	78.4	76.2	74.3	70.7	59.3	64.6	70.3	74.6	80.3	75.2	78.5	72.8	70.1	85.3
Paper and wood pulp	318,337	73.0	76.0	76.9	74.5	73.2	70.6	66.0	71.2	79.6	86.1	85.0	86.3	76.5	67.8	80.0
Textile machinery and parts	324,741	64.6	63.6	65.7	67.9	69.5	77.8	83.2	84.1	83.0	87.8	96.7	99.9	78.7	53.6	105.2
Rubber footwear	271,755	51.8	54.1	53.7	49.6	50.4	49.6	53.1	55.7	55.9	55.5	55.8	54.1	53.3	45.2	55.8
Rubber goods, tires, and inner tubes	261,155	56.8	57.5	59.3	60.9	59.2	60.6	60.4	60.5	61.0	66.2	70.2	68.7	61.8	49.6	65.8
Leather tanned, curried, and finished	273,500	95.5	102.6	95.9	89.9	85.1	93.7	98.0	94.5	98.1	99.5	95.9	96 6	95.4	81.4	96.9
Hosiery and knit goods	182,627	60.4	65.2	63.4	60.1	61.2	62.5	62.6	67.2	69.5	70.6	68.0	56.0	63.9	61.7	82.0
Clothing, men's[3]	188,826	96.8	114.5	113.9	103.9	105.7	111.2	122.1	126.4	111.8	118.6	114.4	121.3	113.4	91.8	116.7
Printing, book and job	266,818	76.9	80.7	77.3	76.8	77.4	74.9	76.9	78.4	82.8	76.9	76.9	81.1	78.1	80.5	85.0
Bread and other bakery products	217,211	134.1	132.9	136.6	129.8	137.2	143.4	147.8	139.9	142.3	138.4	140.6	137.5	138.4	135.7	134.1
Confectionery	137,269	68.4	62.3	57.6	54.6	55.2	55.3	37.6	65.4	83.2	84.3	83.8	85.5	66.1	66.2	72.6
Furniture[4]	209,072	68.0	70.9	69.9	67.5	66.4	66.5	68.7	72.3	75.4	79.9	80.9	78.8	72.1	67.6	87.0
Boot and shoe cut stock and findings	164,927	82.9	90.4	90.2	80.0	65.5	78.6	86.8	75.4	80.4	77.0	72.7	73.5	79.5	76.7	83.6
Silk and rayon goods	139,885	96.4	88.2	87.3	86.2	76.0	70.7	73.2	73.6	77.6	81.9	87.8	84.0	81.9	89.8	165.0
Clothing, women's[5]	133.271	129.7	140.7	151.6	140.4	139.3	134.8	133.0	150.0	157.0	144.8	144.8	151.3	143.1	127.8	129.1

[1] The averages for the three years, 1925, 1926 and 1927 were taken as the base (100) in computing the index numbers presented in this table. [2] Excluding radios.
[3] Includes men's, youths' and boys' clothing; work clothing; furnishing goods; shirts and nightwear; and suspenders. [4] Including store and office fixtures.
[5] Includes corsets and allied garments.

All Manufacturing Industries, Combined. The index number representing employment of wage-earners at the lowest point of the depression in July, 1932, was 51.7, since which month there have been various changes in levels, some due to seasonal factors and others to general business gains or recessions. The peak employment after the depression low point, occurred in April, 1937, represented by 90.9. The low point of the subsequent recession was 62.3, in June, 1938. Improvement in business brought the level back to 74.8 in March, 1939, it dropped to 71.2 in June, and then reached a high point for the year, at 80.5 in November, followed by a slight decline in December. The number employed during the month of least employment in 1939 (June) exceeded the number employed in each of the first eight months in 1938, thus showing generally greater employment in 1939 than in 1938. Average employment in 1939 was represented by the index number 75.4, as compared with 68.9 in 1938, and 85.2 in 1937.

Cotton Goods. The cotton goods industry during recent years has been seriously affected by changes in the nature of products made as well as by the general business depression. Cotton goods exclusively are manufactured only by a very limited number of important mills in Massachusetts. Nearly all others now produce mixtures of cotton and rayon or silk, and a number of mills formerly classified under the cotton goods industry are now included in the silk and rayon goods industry. These marked changes in the cotton goods industry are distinctly reflected in the index numbers representing employment and amounts of wages paid. In 1939, the highest index number representing employment was 42.1, in November, and the lowest was 33.4, in June. The average for the year 1939 was 37.5, as compared with 33.3 in 1938, and 46.5 in 1937.

Boots and Shoes. The boot and shoe industry in Massachusetts had a rather unfavorable year in 1939, as it did in 1938. The two seasonal peaks are represented by index numbers 75.6 in March and 73.8 in August, and the low points were 59.6 in June and 54.6 in December. The average for the year 1939 was 67.4, as compared with 70.1 in 1938, and 78.7 in 1937.

Woolen and Worsted Goods. There was considerable improvement in 1939 over 1938 in the manufacture of woolen and worsted goods, especially during the first seven months in 1939 compared with the corresponding months in 1938. The average for the year 1939 was 84.6, for 1938 was 68.8, and for 1937 was 88.2.

Electrical Machinery, Apparatus and Supplies. The index number representing employment in this industry for the year 1939 was 83.5, as compared with 72.4 in 1938, and 121.1 in 1937. In January, 1939, the index number of employment was 73.6. There was an almost continuous improvement from month to month until employment reached the level in December represented by the index 97.5.

Foundry and Machine Shop Products. Beginning in January (the lowest point during the year, 72.7) the trend in 1939 was continuously upward, although very slightly so at times, until it reached 85.4 (the highest point), in December. The average for 1939 was 77.6, as compared with 74.0 in 1938, and 87.1 in 1937.

The five industries discussed above together provide employment for about 35 per cent of the total number of wage-earners employed in all manufacturing establishments in Massachusetts. In earlier years these five industries together have employed upwards of 40 per cent, but they seem to have been more adversely affected by the depression than the large number of industries not in themselves of great importance.

In three of the 20 leading industries the index numbers representing numbers of wage-earners employed in 1939 averaged well in excess of 100. These industries were: men's clothing; women's clothing; and bread and other bakery products. In the manufacture of both men's and women's clothing, there were increases each year since 1932 in the number of establishments in operation, the number of wage-earners employed, and the amounts paid in wages, especially in women's clothing manufacturing. The number of establishments engaged in the manufacture of bread and other bakery products, the number employed and the wages paid, have remained fairly constant during the past five years.

Index numbers representing the total amounts paid in wages to those employed in all manufacturing industries combined, and in each of 20 of the leading industries, are included in Table 3 with the index numbers of employment. The trend of the curve representing wages paid usually follows quite closely the trend of the curve representing employment, but during the period of depression, the decreases in the amounts paid in wages were proportionately greater than the decreases in numbers employed, due not only to reductions in numbers of wage-earners but also to part-time employment, and decreases in the basic rates. On reference to the charts on pages 83 to 89, it will be observed that, with few exceptions, the curve representing amounts paid in wages was continuously below that representing employment during each of the years 1932 to 1936, inclusive. Thereafter there were a number of instances where the curve of wages paid reached somewhat higher levels than the employment curve but this was not true for any extended period, except in 1939 with respect to electrical machinery, apparatus, and supplies, foundry and machine-shop products, rubber footwear, and textile machinery and parts.

Table 4.—Index Numbers of Employment and Amounts Paid in Wages in Manufacturing Establishments in Sixteen Leading Industrial Cities in Massachusetts: By Months in 1939, and by Years, 1939, 1938, 1937.

(Source:—Monthly Survey of Representative Manufacturing Establishments, 1937, 1938, and 1939.

Cities	Average Number of Wage-Earners[1]	Index Numbers, 1939, by Months												Annual Index Numbers		
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	1938	1937
Employment																
Boston	78,364	66.2	69.8	70.8	71.9	70.2	70.4	69.1	74.5	77.8	79.8	79.0	77.6	73.1	66.3	78.3
Brockton	12,682	71.1	72.4	73.0	70.7	50.7	55.9	64.2	66.5	66.3	65.4	48.2	50.5	62.9	62.4	67.2
Cambridge	21,859	76.5	74.7	74.9	73.7	73.6	74.2	76.4	78.0	79.4	79.3	80.0	79.6	76.7	74.3	82.6
Chicopee	10,171	60.8	60.5	60.9	58.7	57.2	61.6	59.0	60.6	61.2	61.2	60.0	67.1	60.7	55.6	76.6
Fall River	31,146	81.3	81.8	81.9	80.4	79.1	79.9	80.3	79.6	87.7	88.0	89.0	87.9	83.1	70.0	72.0
Fitchburg	8,411	80.6	81.4	79.8	77.4	77.5	79.2	79.2	80.8	82.1	86.0	86.6	87.2	81.5	79.9	95.2
Haverhill	11,080	66.1	70.7	72.3	68.3	61.8	60.7	66.7	70.5	68.4	67.1	60.7	62.6	66.3	63.7	73.2
Holyoke	16,499	42.7	41.6	42.3	41.8	41.6	41.2	40.8	41.3	42.3	43.6	45.4	45.0	42.5	46.8	73.8
Lawrence	25,983	96.4	89.7	88.2	78.1	80.2	79.0	86.7	90.2	85.7	100.4	106.5	105.3	90.5	73.8	98.2
Lowell	20,405	67.0	68.9	68.7	65.9	66.2	64.4	62.9	66.3	67.2	69.0	67.3	63.1	66.4	63.6	80.7
Lynn	20,551	52.3	54.5	56.4	54.6	52.0	51.7	54.7	56.2	55.5	58.8	58.0	60.0	55.4	61.2	78.5
New Bedford	35,308	45.4	45.9	47.0	46.6	43.1	41.1	42.2	43.6	44.3	49.4	51.3	51.0	45.9	44.8	77.0
Peabody	6,085	79.6	83.5	77.0	69.8	68.0	61.7	74.7	73.0	74.6	78.1	77.1	76.6	74.5	72.2	87.1
Pittsfield	9,045	68.5	68.6	72.1	74.7	77.3	79.3	79.0	78.4	80.1	82.9	89.0	89.6	78.3	65.8	105.3
Springfield	17,989	72.1	76.7	79.1	77.5	75.5	75.1	75.3	74.5	76.3	80.3	81.9	86.1	77.5	73.3	100.9
Worcester	31,047	72.1	74.8	76.4	77.1	78.0	79.2	80.9	82.0	84.6	89.9	92.3	93.2	81.7	73.2	107.3
	Average Amounts Paid in Wages per Week[1]	**Amounts Paid in Wages Weekly**														
Boston	$2,039,987	59.9	63.4	63.8	63.3	62.3	63.0	63.0	67.2	69.6	71.2	71.2	71.2	65.8	58.6	71.5
Brockton	294,147	62.2	64.8	65.7	57.6	38.5	44.9	54.2	56.2	50.6	54.1	40.0	41.8	52.6	49.3	57.0
Cambridge	527,490	70.7	70.7	70.9	68.2	69.8	69.9	74.0	75.2	77.1	74.0	75.6	78.6	72.9	69.9	79.0
Chicopee	252,173	75.1	72.0	72.8	71.7	70.2	73.1	68.7	69.9	69.5	67.5	72.0	82.6	72.1	61.3	77.6
Fall River	558,883	71.2	71.2	72.3	68.6	67.2	69.4	71.0	67.0	78.1	74.0	83.1	84.6	73.1	58.8	64.3
Fitchburg	196,173	75.8	77.7	75.3	72.4	74.6	74.5	71.7	77.2	81.1	86.4	86.1	89.0	78.5	68.7	89.5
Haverhill	258,751	49.3	58.5	61.8	52.7	39.5	39.9	54.0	56.4	53.8	50.2	39.8	42.8	49.9	44.9	53.9
Holyoke	359,585	44.2	44.0	44.8	43.2	42.7	41.2	40.3	41.6	45.5	47.0	47.7	48.5	44.2	44.7	71.9
Lawrence	583,913	81.5	78.1	75.9	62.1	63.2	65.6	71.9	76.0	70.0	87.4	94.4	93.3	76.6	61.2	89.3
Lowell	390,446	60.2	65.8	62.5	58.4	59.7	58.4	58.8	63.5	63.7	63.9	62.1	60.2	61.4	55.4	75.8
Lynn	542,184	55.0	56.9	58.0	56.2	54.6	55.2	57.2	58.8	59.3	63.4	64.2	69.7	59.0	55.2	77.2
New Bedford	698,356	42.0	41.9	43.3	42.1	39.0	37.2	38.9	41.0	41.8	49.2	53.9	53.9	43.7	37.6	68.3
Peabody	150,550	84.0	91.6	83.9	77.0	72.1	71.6	82.2	78.0	83.0	84.4	83.2	84.3	81.3	76.6	91.9
Pittsfield	236,799	58.0	56.2	60.6	65.7	70.8	73.1	74.2	75.5	74.2	78.0	83.6	88.2	71.5	57.8	101.1
Springfield	457,322	68.3	75.2	78.0	76.1	74.9	74.0	73.7	70.8	74.1	78.9	81.0	86.0	75.9	66.6	100.4
Worcester	819,296	75.9	79.9	89.0	83.5	85.0	87.9	90.9	93.8	98.6	109.9	115.4	119.1	94.1	74.0	113.7

[1] The averages for the three years, 1925, 1926 and 1927 were taken as the base (100) in computing the index numbers presented in this table.

Table 5.—Average Weekly Earnings of Wage-earners in Manufacturing Establishments in Massachusetts, All Industries Combined, Twenty Leading Industries and Sixteen Leading Industrial Cities; by Months in 1939, and by Years, 1939, 1938, 1937.

(Source:—Monthly Survey of Representative Manufacturing Establishments.)
(Base:—Average Weekly Earnings of Wage-earners Employed during Three-year Period 1925-1926-1927, as Determined by Census of Manufactures.)

Principal Industries[1] and Cities	Average Weekly Earnings 1925-1927	Average Weekly Earnings in 1939, by Months												Average Weekly Earnings (Annual Averages)		
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	1938	1937
All Industries Combined	$23.29	$22.05	$22.44	$22.35	$21.89	$21.78	$22.11	$22.41	$22.36	$22.59	$22.52	$22.85	$23.32	$22.39	$21.40	$22.76
Cotton goods	18.52	16.78	16.78	16.74	16.34	15.73	16.10	16.59	16.18	16.94	16.61	17.82	17.92	16.71	15.62	17.18
Boots and shoes	22.29	17.68	19.35	19.70	17.75	15.68	15.96	18.14	18.71	17.49	16.44	15.86	16.34	17.43	16.71	17.74
Woolen and worsted goods	22.08	19.84	19.89	19.13	18.68	19.29	19.85	19.89	19.47	19.47	20.43	20.45	20.37	19.73	19.26	20.42
Electrical machinery, apparatus, and supplies	27.74	29.39	29.43	29.79	29.93	30.05	30.16	30.79	30.51	30.33	30.90	31.14	32.53	30.41	27.07	29.83
Foundry and machine-shop products	28.78	27.30	27.55	27.34	28.19	28.22	28.55	28.27	28.00	29.00	29.10	29.61	30.01	28.43	26.44	29.74
Dyeing and finishing textiles	22.34	21.51	23.23	23.09	23.03	22.21	23.17	21.95	22.63	23.64	23.83	22.66	23.05	22.83	22.41	22.89
Paper and wood pulp	24.39	23.65	24.21	24.36	23.67	23.62	23.44	21.65	23.23	25.13	26.16	25.31	25.56	24.17	22.63	24.51
Textile machinery and parts	25.45	25.33	24.65	25.66	26.09	26.46	28.05	28.06	27.89	27.64	27.96	28.18	28.63	27.05	21.86	29.45
Rubber footwear	22.54	24.24	25.37	24.98	23.95	24.37	24.44	25.33	25.73	25.07	24.70	25.65	24.91	24.90	22.88	23.87
Rubber goods, tires, and tubes	24.84	23.39	23.87	23.75	23.64	23.78	24.29	23.73	24.00	23.56	23.98	24.76	24.59	23.95	23.08	23.44
Leather tanned, curried, and finished	26.10	27.31	27.58	26.42	26.09	25.71	26.50	26.86	26.55	26.77	26.41	26.53	26.82	26.63	25.81	26.17
Hosiery and knit goods	18.10	17.00	17.60	17.39	17.10	17.40	17.86	18.10	19.16	19.01	19.35	18.80	17.56	18.03	17.00	16.92
Clothing, men's	19.79	17.96	19.29	18.85	17.47	18.24	18.62	19.12	19.31	17.20	18.29	19.12	19.05	18.54	16.88	17.25
Printing, book and job	29.34	26.40	27.64	27.03	26.86	27.01	26.03	27.19	27.74	28.24	26.17	26.38	27.47	27.01	27.31	27.56
Bread and other bakery products	25.46	24.29	23.62	23.93	22.96	24.01	24.48	24.68	23.64	23.96	23.44	23.82	23.94	23.90	24.42	23.15
Confectionery	16.90	17.68	17.31	16.30	16.32	16.52	17.08	16.78	17.54	19.05	18.27	18.15	18.96	17.50	16.87	16.96
Furniture	25.75	20.41	20.70	20.49	20.49	20.21	20.55	20.99	21.41	22.32	22.39	22.93	23.06	21.33	20.31	22.09
Boot and shoe cut stock and findings	21.94	19.28	19.83	20.00	18.36	16.41	19.20	19.84	17.63	18.82	17.88	17.52	17.90	18.56	18.62	18.54
Silk and rayon goods	20.59	17.86	17.47	17.29	17.31	16.46	16.66	17.15	16.80	16.89	17.00	17.86	17.81	17.21	16.66	18.04
Clothing, women's	21.65	14.68	15.00	15.68	14.87	15.41	15.08	14.99	15.61	15.87	14.62	15.00	15.94	15.23	14.59	14.73
Boston	26.03	24.12	24.20	23.41	22.90	23.08	23.31	23.76	23.49	23.29	23.24	23.49	23.89	23.52	23.54	23.73
Brockton	23.19	20.95	21.42	21.53	19.50	18.21	19.29	20.23	20.23	19.15	19.81	19.88	19.82	20.00	18.85	20.17
Cambridge	24.13	23.42	23.98	23.98	23.45	24.03	23.89	24.57	24.43	24.61	23.65	23.98	25.06	24.09	23.89	24.34
Chicopee	24.79	26.96	25.95	26.07	26.61	27.76	25.90	25.45	25.22	24.84	24.12	26.22	26.90	26.00	24.06	24.46
Fall River	17.94	16.03	15.94	16.16	15.63	15.44	15.78	16.07	15.33	16.22	15.32	17.01	17.52	16.04	15.12	16.25
Fitchburg	23.32	22.20	22.14	21.87	21.69	22.16	21.66	20.83	21.98	22.73	23.11	22.86	23.48	22.23	20.31	22.31
Haverhill	23.35	18.49	20.49	21.17	19.11	15.83	16.26	19.84	19.59	19.24	18.28	16.00	16.77	18.42	17.30	18.09
Holyoke	21.79	22.11	22.60	22.71	21.94	21.78	21.20	20.96	21.34	22.78	22.82	22.26	22.81	22.11	20.52	20.80
Lawrence	22.47	18.89	19.87	19.64	18.16	17.99	18.96	18.93	19.22	18.64	19.86	20.23	20.22	19.22	18.43	20.05
Lowell	19.13	17.69	18.52	17.65	17.14	17.05	17.16	17.69	18.13	17.94	17.52	17.46	17.93	17.66	17.13	19.74
Lynn	26.38	28.26	28.09	27.67	27.71	28.29	28.81	28.23	28.20	28.78	29.06	29.49	30.96	28.63	24.32	26.63
New Bedford	19.78	18.53	18.27	18.42	18.06	17.61	17.61	17.93	18.26	18.34	19.36	20.40	20.51	18.61	16.86	19.14
Peabody	24.74	24.97	25.97	25.82	26.14	25.12	27.50	26.05	25.28	26.32	25.54	25.48	26.00	25.85	25.24	25.21
Pittsfield	26.18	25.81	25.44	26.12	27.35	28.46	28.64	29.18	29.63	28.50	28.95	28.90	30.29	28.11	26.42	31.18
Springfield	25.42	26.15	26.52	26.63	26.43	26.71	26.54	26.36	25.60	26.14	26.36	26.54	26.83	26.40	25.14	27.61
Worcester	26.39	25.33	25.69	28.02	26.05	26.20	26.67	26.99	27.50	28.04	29.42	30.11	30.78	27.57	24.30	28.98

[1] The industries are arranged in the order of the average number of employees in 1925, 1926 and 1927.

In Table 4, index numbers representing the number of wage-earners employed and the amounts paid in wages in the manufacturing industries are presented for 16 leading industrial cities for each of the years 1937, 1938, and 1939, and by months in 1939. In 14 of the 16 cities the average number employed and in 15 of the 16 cities the average amount paid in wages were greater in 1939 than in 1938, especially with respect to Fall River and Lawrence. Employment was better than 75 per cent of normal in 1939 in the following cities: Lawrence, 90.5; Fall River, 83.1; Worcester, 81.7; Fitchburg, 81.5; Pittsfield, 78.3; Springfield, 77.5; and Cambridge 76.7. The maximum employment occurred mostly during the closing months of the year but varied somewhat because of seasonal factors affecting the major industries in the respective cities.

The index numbers representing the amounts paid in wages in 1939, in the 16 leading cities, arranged in order from the highest to the lowest, for those showing better than 75 per cent of normal pay rolls, were: Worcester, 94.1; Peabody, 81.3; Fitchburg, 78.5; Lawrence, 76.6; and Springfield, 75.9.

Earnings of employees are affected by the continuity of their employment, by undertime, etc. There are presented in Table 5, the average weekly earnings of wage-earners employed in all manufacturing industries combined, in each of 20 leading industries, and in each of 16 leading manufacturing cities in Massachusetts, for each of the months in 1939, with averages for 1939, 1938, and 1937. The averages for these three years were derived from data as reported by representative employers in connection with the monthly surveys.

In 1939, the average weekly earnings were higher than in 1939 in all but three of the 20 leading industries and in all of the 16 leading cities except Boston. The decreases which did occur were relatively small. Average weekly earnings were naturally higher in those industries in which a large proportion of the employees were males engaged in skilled or semi-skilled occupations, namely: electrical machinery, apparatus and supplies, $30.41; foundry and machine shop products, $28.43; textile machinery and parts, $27.05; book and job printing, $27.01; and leather tanning, currying and finishing, $26.63. The cities in which the average weekly earnings were highest were: Lynn, $28.63; Pittsfield, $28.11; Worcester, $27.57; Springfield, $26.40; Chicopee, $26.00; and Peabody, $25.85.

Wholesale and Retail Trade. The monthly collection of pay roll data from wholesale and retail trade establishments was first undertaken in November, 1929. In December, 1939, reports were received covering 714 wholesale establishments employing 17,159 persons, and 3,271 retail establishments employing 83,143 persons, or a total of 3,985 establishments and 100,302 persons. The returns for wholesale trade represent about 35 per cent of the total number actually employed in all such establishments in Massachusetts, and in the retail trade the coverage is about 60 per cent.

The results of the monthly surveys are published in mimeographed form. These summaries are sent to each organization reporting, and show the number of reports received, the number of stores or outlets covered, the number of persons employed, and the amounts paid in salaries or wages to employees. Data are shown separately for wholesale trade, for each of seven wholesale groups (and a miscellaneous group), for retail trade, and for eleven retail groups, including a miscellaneous group. For department and dry goods stores, grocery and food stores, and lunchrooms and restaurants the data are presented separately for "chain stores" and "independently owned stores." Summary data are also presented for 19 cities which are important trading centers, but the information so presented is not fully representative because "chain" organizations do not furnish reports for local units, by municipalities.

The returns in full detail are not included in this report but in Table 6 there are given two series of index numbers showing trends of employment and amounts paid in wages for the principal trade groups, by months in 1939, with averages for each of the years 1939, 1938, and 1937. Because of the changes which occur in the list of reporting establishments, the index numbers have been computed by the "link-relative" method. The data for Massachusetts, as published in the report, "Census of Distribution, 1929", taken by the United States Bureau of the Census, were used as bases in computing the index numbers.

Table 6.—Index Numbers of Employment and Amounts Paid in Wages in Wholesale and Retail Trade Establishments in Massachusetts: by Months in 1939, and by Years, 1937, 1938, and 1939.

(Source:—Monthly Survey of Representative Establishments in Wholesale and Retail Trade)

Trade Groups	Average Number of Wage-Earners in 1929[1]	Index Numbers, 1939, by Months.												Annual Index Numbers		
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1939	1938	1937
		Employment														
Wholesale and Retail Trade—All Groups Combined	**282,768**	**74.9**	**74.2**	**74.9**	**75.4**	**77.1**	**76.9**	**75.0**	**74.2**	**76.9**	**77.2**	**80.1**	**92.3**	**77.4**	**77.3**	**81.1**
Wholesale Trade[2]	**72,929**	**70.5**	**70.5**	**70.2**	**70.5**	**69.9**	**71.4**	**72.0**	**71.4**	**72.5**	**72.1**	**72.0**	**72.0**	**71.3**	**71.1**	**73.0**
Automobiles, accessories, gas, and oil	8,019	81.0	81.5	81.1	78.3	77.8	76.6	76.0	75.5	77.8	74.8	76.3	77.7	77.9	80.1	83.9
Groceries and food	20,767	69.0	68.9	68.1	69.3	67.8	70.4	72.0	71.3	71.9	71.4	71.4	71.0	70.2	70.4	71.0
Retail Trade[2]	**209,839**	**77.4**	**76.5**	**77.6**	**78.2**	**80.5**	**79.9**	**77.2**	**76.3**	**79.6**	**80.1**	**83.9**	**99.8**	**80.6**	**80.0**	**84.1**
Automobiles, accessories, gas, and oil	23,226	62.7	62.0	62.7	65.2	66.2	65.7	65.4	64.1	63.4	64.3	64.9	65.2	64.3	64.4	74.0
Department and dry goods stores	44,247	63.3	61.8	64.0	65.7	69.0	68.0	64.1	63.1	68.3	68.3	74.7	107.9	69.9	71.1	74.1
Drug stores	6,609	94.9	94.6	94.9	95.0	94.4	94.2	97.3	97.8	94.5	94.3	94.9	96.9	95.3	96.0	96.2
Fuel and ice	9,031	101.6	106.5	104.4	83.9	86.6	85.5	88.7	86.9	92.5	96.3	95.9	96.6	93.8	89.7	91.0
Furniture and radios	10,164	70.7	70.3	70.4	70.9	70.8	70.2	66.8	68.3	70.2	72.7	73.3	75.2	70.8	74.5	83.4
Groceries and food	42,194	96.9	97.8	97.8	98.0	99.4	100.6	100.1	99.1	97.6	97.2	98.9	101.6	98.8	98.5	105.7
Lunchrooms and restaurants	23,078	106.8	106.1	105.1	106.6	110.2	109.3	103.7	102.1	108.9	106.5	109.8	106.6	106.8	106.8	110.8
Wearing apparel and accessories	21,063	68.8	62.5	65.9	71.5	73.5	70.1	61.8	60.5	68.8	72.4	76.7	85.1	69.8	68.3	72.7
	Average Amounts Paid in Wages in 1929[1]	**Amounts Paid in Wages Weekly**														
Wholesale and Retail Trade—All Groups Combined	**$7,423,203**	**68.0**	**67.3**	**67.7**	**68.0**	**69.6**	**70.2**	**70.1**	**68.8**	**70.5**	**70.2**	**71.8**	**79.3**	**70.1**	**68.6**	**71.4**
Wholesale Trade[2]	**2,799,260**	**66.8**	**67.2**	**66.7**	**67.1**	**67.5**	**68.9**	**71.2**	**70.3**	**71.5**	**69.6**	**70.3**	**70.7**	**69.0**	**67.6**	**69.4**
Automobiles, accessories, gas, and oil	294,418	68.1	70.1	69.1	67.3	67.6	67.5	66.6	67.6	66.9	65.4	68.2	70.7	67.9	66.3	72.4
Groceries and food	758,016	67.3	67.8	66.6	68.1	68.0	70.1	75.4	74.0	76.1	72.6	73.1	71.9	70.9	69.3	65.5
Retail Trade[2]	**4,623,943**	**71.6**	**70.5**	**71.3**	**71.6**	**73.7**	**74.1**	**73.0**	**71.5**	**73.5**	**73.9**	**76.0**	**86.6**	**73.9**	**72.2**	**75.2**
Automobiles, accessories, gas, and oil	651,694	57.3	55.4	56.0	61.3	61.6	60.6	60.2	58.8	58.4	60.3	60.1	60.0	59.2	57.6	64.8
Department and dry goods stores	788,076	67.6	65.5	66.9	69.0	72.2	72.3	70.2	68.5	72.5	71.9	74.9	102.2	72.8	70.3	70.9
Drug stores	154,115	85.3	85.0	85.6	86.3	87.1	87.9	89.9	86.9	85.5	84.4	86.3	86.4	86.4	81.4	82.5
Fuel and ice	259,316	92.0	95.2	97.8	70.6	73.1	72.9	80.7	72.3	81.6	85.2	87.3	96.0	83.7	79.4	79.4
Furniture and radios	301,230	60.9	60.6	60.6	61.3	62.9	61.9	60.4	62.3	63.5	64.8	65.0	66.0	62.5	65.6	73.9
Groceries and food	819,291	91.1	91.2	91.6	93.0	94.3	96.6	95.5	94.6	91.9	92.5	94.1	96.4	93.6	92.3	98.1
Lunchrooms and restaurants	393,810	100.3	99.6	99.6	101.3	103.2	103.1	98.6	97.7	101.7	101.9	103.7	103.9	101.2	100.2	102.2
Wearing apparel and accessories	466,471	65.3	60.5	61.3	66.6	68.3	67.4	61.5	60.2	66.4	69.1	73.7	79.5	66.7	66.7	70.5

[1] The average in each case was taken as a base in computing the index numbers presented in this table.

[2] The large trade groups, only, are shown in this table; consequently the sub-totals exceed the sum of the items thereunder.

The employment index number for 1939 in wholesale trade, all groups combined, was 71.3 as compared with 71.1 in 1938, and 73.0 in 1937, showing no material change during the past three years. In retail trade, employment in 1939 continued much below normal. The employment index number in 1939 was 80.6, showing a slight gain over 1938 (80.0) but being somewhat less than the number (84.1) in 1937. Retail trade failed to show the usual seasonal trend due to the Easter trade as Easter week came between reporting periods and the effects thereof were not evident in the survey returns. In December, due to the Christmas holiday trade, the index number reached 99.8. This index was particularly affected by trends in department and dry goods stores. The distributors of fuel (and ice) reflected definite seasonal trends in employment and pay rolls during the fall and winter months. In general, the changes in the amounts of wages paid followed quite closely the changes in the numbers of persons employed, except that when the regular forces were supplemented by temporary salespeople, the increases in total wages paid were not as large, proportionately, as the increases in employment.

Construction. The collection of monthly pay roll data from building contractors was first undertaken in April, 1927. The survey was confined strictly to this class of work, as performed on private contracts, until September, 1934, when data were also tabulated, in very brief form, for federal and federal aided work, on both highway and building construction. Beginning with the returns for January, 1937, the data under the general heading of highway construction were further subdivided so as to present separate tabulations for heavy construction as distinct from ordinary highway and road work.

The questionnaire used calls for the following information relative to the week including or ending nearest the 15th of the month: number of building or other type of tradesmen employed, amounts paid in wages, and total number of man-hours worked, by indiviual projects or groups of projects within a single city or town, separately by "private" and "WPA", etc. Contractors state whether they are general or sub-contractors, and, if the latter, the type of contracting done. The returns are tabulated on the basis of the type of work performed, and two separate summaries of data are made under each of the headings "Building Construction," "Highway Construction," and "Heavy Construction," one summary relating to private work and the other relating to federal work. Certain of the larger contractors occasionally do all three classes of work and, under the plan referred to above, proper allocation of work performed can be made. Nearly all of the important general contractors and sub-contractors are included in the monthly survey. Since the depression, increasingly large numbers of building tradesmen have been working "on their own" because there has not been sufficient work for contractors to insure fairly steady employment.

In Table 7 there are presented summary data for all classes of contract work combined, both private and federal or federal-aided, by months in each of the years 1937, 1938, and 1939. Data for earlier years, on an identical basis, are not available. During these three years there has been so little change in the list of contractors reporting (numbering about 700) that it may be considered that the data are comparable for the entire period.

It will be noted that the number employed, amounts paid in wages, and man-hours worked in 1939 averaged considerably higher than they did in 1938, and slightly higher than in 1937. Seasonal characteristics are evident from the 1939 data, which show the least employment during the winter months, and the greatest employment during the summer months. Employment in January, 1939, was relatively high because of the non-completion of many contracts for various types of building, highway, and heavy construction work occasioned by the hurricane and flood late in September, 1938. The effects of these disturbances are evident upon reference to the data for the closing months in 1938.

The average weekly earnings of the workmen employed in 1939 was $29.08, or 88.5 cents per hour, for 32.9 hours worked per week. None of these averages show any marked change over the averages for the years 1938 or 1937. The

Table 7.—Employment, Pay Roll, and Man-hour Data as Reported by a Representative Group of About 700 Contractors, Engaged in All Classes of Contract Work in Massachusetts, by Months, 1937, 1938 and 1939.

Months	1937			1938			1939		
	Number of Workmen	Amounts Paid in Wages	Total Man-hours Worked	Number of Workmen	Amounts Paid in Wages	Total Man-hours Worked	Number of Workmen	Amounts Paid in Wages	Total Man-hours Worked
January	8,811	$256,832	291,310	6,694	$183,032	194,911	11,106	$325,889	368,897
February	8,048	234,922	262,980	5,939	175,253	181,934	9,084	254,131	280,691
March	8,260	232,621	267,444	5,894	174,202	180,241	8,158	212,449	234,314
April	10,046	289,020	333,033	7,513	221,747	241,872	11,594	319,652	368,423
May	11,351	355,391	405,106	7,959	241,540	270,644	12,075	363,210	410,480
June	11,559	347,916	405,209	8,470	251,166	281,613	13,269	385,259	443,675
July	11,277	350,081	402,176	8,606	262,866	289,187	12,690	370,127	432,081
August	11,431	371,427	414,744	8,623	259,586	281,373	12,416	364,730	414,138
September	11,539	366,956	408,259	8,840	267,075	293,611	11,328	342,456	389,282
October	11,336	349,074	403,082	11,167	346,884	389,907	10,970	320,017	362,156
November	11,601	343,944	388,625	12,347	356,721	407,999	9,982	304,159	331,709
December	8,478	246,968	273,109	12,391	363,014	409,423	8,382	248,345	270,565
Averages	10,311	$312,096	354,590	8,704	$258,591	285,225	10,921	$317,535	358,868

fact that the hours worked per week averaged so near 32 per week (four standard 8-hour days) suggests that those employed could very readily have worked additional hours had they had the opportunity.

The building construction returns cover the greatest number of workmen and are tabulated in considerable detail so as to show information separately for seven types of contracting. This is virtually a tabulation by occupations, and shows quite definitely the seasonal trends by types of work performed. The seven contracting groups are as follows: carpenter; electrical; general; mason and plastering; painting; plumbing, heating and ventilating; roofing and sheet metal; and "all other classes." These data are also presented separately for leading cities and towns.

Reports received in 1939 from contractors engaged on building construction work included, during the peak month-June, 8,444 workmen out of a total of 13,269 covered by all classes of contracts. These 8,444 workmen were paid a total of $264,121 for 276,295 man-hours worked that representative week, or an average of $31.28, for 32.7 hours, or 95.6 cents per hour. These data include both private and federal or federal-aided work. The smallest number employed was 5,474, in March.

For the greater part of the time since the surveys of construction were first undertaken in 1927, the data related wholly to private building work and, in order to show the fluctuations in this type of employment, index numbers were computed, by months, beginning with April, 1927. These series are presented in brief form in Table 8 and show that 1939 did not differ materially from any of the past seven years, except 1937, with respect to employment of workmen on private building construction.

Table 8.—Index Numbers of Employment and Earnings of Building Tradesmen in Massachusetts: By Years 1929-1939, Inclusive, and by Months in 1939.

(Source:—Monthly Survey of Building Construction)

Years and Months	Index Numbers (Base:—Average for 1928=100.0)[1]					
	Number of Tradesmen	Amount Paid in Wages	Number of Man-hours	Average Weekly Hours per Man	Average Weekly Earnings per Man	Average Hourly Earnings per Man
1928 (*Base*)	100.0	100.0	100.0	100.0	100.0	100.0
1929	103.0	105.3	102.4	98.7	101.3	102.6
1930	94.6	97.2	92.7	97.9	102.8	105.0
1931	66.8	62.0	59.5	88.9	91.5	102.8
1932	41.2	29.2	32.1	77.8	70.4	90.6
1933	27.9	16.6	21.0	74.8	59.3	79.4
1934	31.4	19.9	25.0	79.5	63.4	79.8
1935	35.1	22.8	28.6	80.6	64.4	80.1
1936	36.4	25.2	31.2	85.5	68.5	79.9
1937	44.3	33.3	37.7	85.4	75.0	87.5
1938	37.2	27.1	29.7	79.7	73.5	92.1
1939	35.4	26.1	28.6	74.3	74.6	93.2
1939						
January	34.2	24.9	26.9	73.2	74.1	93.9
February	28.1	19.7	20.7	68.6	71.4	96.6
March	24.8	16.8	17.6	66.1	69.1	96.9
April	31.1	22.2	24.3	72.6	72.8	93.1
May	37.5	28.4	31.4	77.7	77.4	92.4
June	39.5	30.0	32.7	76.8	77.7	93.9
July	38.1	29.0	31.9	77.7	77.7	92.8
August	39.5	29.6	32.5	76.5	76.2	92.3
September	40.3	29.9	33.5	77.2	75.4	90.7
October	39.0	28.3	31.8	74.9	73.0	90.5
November	38.2	29.1	31.7	76.3	76.6	93.3
December	34.3	25.2	27.8	74.4	74.0	92.4

[1] This survey was first undertaken in April, 1927.

On highway construction, the greatest number were employed in July. The 3,439 then reported for were paid a total of $82,279 for 121,224 man-hours worked. Averaging these data gives $23.93 as the weekly earnings, 35.2 as the weekly hours worked, and 67.9 cents as the average hourly earnings. The least number employed was 619, in December.

On heavy construction work, the greatest number were employed in April, 2,873 workmen. They received $68,669 in weekly wages, for 89,831 man-hours. The averages for this week were: weekly earnings, $23.90; hours, 31.3; and earnings per hour, 76.4 cents. The smallest number employed was 1,071, in December.

Public Utilities. The monthly survey of public utility companies was first undertaken in January, 1929, and now covers approximately 95 per cent of all persons employed by such companies in Massachusetts. There have been very few changes of reporting companies and such changes have been due almost wholly to mergers or consolidations resulting in a small decrease in the number of employees covered by the reports. In December, 1939, reports were received from 112 companies employing 44,979 wage earners. The list included six steam railroads, seven street and electric railway companies, 27 passenger bus companies (several of which previously operated street cars), and 72 gas and electric companies. Three of the six railroad companies are engaged in interstate commerce, but each furnishes pay roll data covering its operations solely within Massachusetts.

Table 9.—Index Numbers of Employment and Amounts Paid in Wages by Public Utility Companies in Massachusetts: By Years, 1930-1939, Inclusive, and by Months in 1939.

(Source:—Monthly Survey of Public Utility Companies)

Years and Months	Index Numbers (Base:—Average for 1930=100.0)									
	All Classes Combined		Steam Railroads		Street and Electric Railways		Passenger Bus Companies[1]		Gas and Electric Companies	
	Employment	Amounts Paid in Wages	Employment	Amounts Paid in Wages	Employment	Amounts Paid in Wages	Employment	Amounts Paid in Wages	Employment	Amounts Paid in Wages
1930 (*Base*)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1931	91.4	89.5	86.5	83.7	96.7	95.3	100.4	99.2	96.1	94.4
1932	81.6	73.7	74.4	63.4	90.2	83.6	95.5	85.3	88.5	82.8
1933	77.6	66.1	71.5	58.9	81.2	69.3	101.2	85.1	85.2	74.5
1934	80.3	70.4	74.2	63.0	80.5	70.8	118.6	94.5	88.7	80.5
1935	78.9	73.5	71.1	66.4	79.2	72.5	125.4	104.1	89.3	83.2
1936	81.1	77.8	73.9	71.2	79.9	75.9	131.1	111.9	91.3	88.0
1937	82.5	82.1	75.5	75.5	79.9	77.6	130.4	113.9	93.4	94.7
1938	78.0	80.3	67.6	70.4	78.9	79.3	119.5	107.5	92.4	95.7
1939	78.3	81.1	68.6	72.2	78.5	79.7	116.6	108.4	92.0	94.2
1939										
January	77.8	80.4	68.5	72.3	77.3	78.4	115.8	106.5	91.3	93.2
February	77.6	80.4	68.0	72.1	78.0	79.0	115.9	108.7	91.0	92.9
March	81.4	85.3	74.2	78.9	81.1	86.9	117.2	110.1	90.8	91.7
April	77.7	80.1	68.2	71.6	77.7	78.8	117.3	109.3	91.1	92.6
May	77.2	79.6	66.4	69.2	78.8	80.1	117.2	108.5	91.8	93.9
June	77.7	80.1	67.0	69.8	79.1	79.7	116.0	104.4	92.5	95.2
July	77.7	80.3	67.2	69.8	78.2	79.5	118.1	109.7	92.7	95.6
August	77.9	80.2	67.3	70.1	78.2	78.9	119.0	112.1	93.2	95.0
September	77.8	80.7	67.4	70.7	78.0	79.3	117.0	110.6	92.9	95.2
October	78.7	81.8	69.4	73.2	78.5	79.1	117.6	109.4	92.1	94.9
November	79.0	81.8	69.5	73.8	79.3	78.4	116.4	106.4	92.4	94.7
December	78.8	82.4	70.1	74.9	77.7	77.8	112.2	104.9	91.8	95.4

[1] Passenger bus companies were first canvassed in April, 1931. In computing index numbers for these companies the same index numbers as those for street railway companies were taken as the initial index numbers of this series (as of April, 1931) and thereafter the index numbers were separately computed.

Two series of index numbers are presented in Table 9, one of which relates to employment and the other to total amounts paid in wages to employees in each of the four classes of public utilities. The only noteworthy changes either in employment or pay rolls in 1939 were those occasioned by a severe snow storm in March. Steam railroads and street and electric railways were principally affected.

Municipal Employment. Questionnaires were first sent to muncipalities in April, 1931, requesting employment and pay-roll information relative to employees covered by that section of the General Laws relating to the weekly payment of wages to city and town employees. The persons covered are comparable with "wage-earners" in private employment. The form used calls for the reporting of pay-roll data by departments, which makes it possible for reporting officials to enter the current data more readily. It also makes possible a better interpretation of the returns, because any marked departmental changes are more evident than they would be if only a single total were supplied for the municipality as a whole. The group "Manual workers" includes carpenters, painters, electricians, mechanics, teamsters, chauffeurs, laborers, custodians, janitors, matrons, and cleaners. The group "Clerical and other non-manual employees" includes clerks, stenographers, bookkeepers, and all other office employees considered as "wage-earners."

In order to show seasonal fluctuations in road and highway construction work by municipalities, the pay-roll returns for the various street, highway and public works departments are tabulated separately from pay rolls for workers in other departments. Pay-roll data relative to police, fire, and school departments, and hospitals maintained by public funds are not included in this survey.

During 1939, reports were received each month from nearly 100 municipalities in which reside over 80 per cent of the population of this state. Ordinarily the largest numbers of employees are on the pay rolls during the summer months because muncipal construction and highway work are then at their peak. In 1939, by far the greatest numbers of manual workers in highway and public works departments were employed in March, due to emergency snow and ice removal work. Many cities and towns let out much of such work to contractors, so the complete picture is not presented by the data shown. Two series of index numbers are presented in Table 10, one relating to employment and the other to total amounts paid in wages. These show fewer employees and smaller pay rolls in 1939 than in nearly all of the earlier years considered, except with respect to the clerical and non-manual workers group in which the number employed has been increasing slowly every year since this survey was undertaken.

Table 10.—Index Numbers of Employment and Amounts Paid in Wages in Municipal Employment in Massachusetts: By Specified Classes of Employment: by Years, 1932-1939, Inclusive, and by Months in 1939.

(Source—Monthly Survey of Municipal Employment)

Years and Months	Index Numbers. (Base:—September, 1931=100)									
	Manual Workers						Clerical and Other Non-Manual Employees Paid Weekly		Total—All Classes Specified	
	Highway and Public Works Departments		Other Departments		Total—All Departments					
	Employment	Pay-rolls	Employment	Pay rolls	Employment	Pay rolls	Employment	Pay-rolls	Employment	Pay-rolls
1931, *September (Base)*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1932	75.2	70.8	108.1	89.1	86.5	77.1	100.7	101.8	88.6	80.9
1933	69.1	57.7	94.0	76.5	77.7	64.2	104.4	99.7	81.5	69.5
1934	70.7	59.0	87.3	75.2	76.4	64.9	108.3	102.8	80.9	70.6
1935	64.3	60.4	79.9	74.3	69.6	65.3	115.3	116.9	75.9	72.8
1936	72.5	66.9	75.4	73.5	71.3	67.6	116.4	119.7	79.1	76.1
1937	62.6	61.5	73.8	73.4	64.6	64.3	119.4	123.6	74.2	73.9
1938	64.7	63.7	72.9	72.2	65.4	65.0	122.8	127.6	75.3	74.9
1939	60.0	62.3	70.3	69.5	61.6	63.2	123.9	131.1	71.7	73.4
1939										
January	54.4	56.8	68.0	67.9	57.6	59.5	129.1	134.5	68.8	70.4
February	62.9	65.8	65.9	65.1	61.5	63.2	124.5	130.9	71.8	73.6
March	90.9	79.9	66.2	64.3	77.4	70.6	124.0	130.0	86.4	80.4
April	53.2	57.0	68.2	67.8	56.9	59.5	121.9	127.9	67.1	69.7
May	56.8	61.0	73.1	71.7	60.9	63.3	121.8	129.1	70.8	73.4
June	59.1	62.6	73.9	72.9	62.5	64.7	122.7	130.3	72.4	74.8
July	58.2	62.0	77.4	74.6	63.4	65.1	124.5	132.1	73.4	75.4
August	57.7	62.5	75.3	73.0	62.3	64.7	122.8	130.4	72.2	74.8
September	58.6	62.8	70.3	71.2	60.9	64.1	121.9	130.4	70.8	74.2
October	58.9	60.7	70.0	70.1	61.0	62.5	124.3	132.5	71.1	72.9
November	55.5	58.8	68.6	68.1	58.6	60.7	124.1	132.0	68.8	71.1
December	53.3	58.2	66.9	67.1	56.7	59.9	125.2	132.9	67.1	70.5

Miscellaneous Classes of Employment. In order that the coverage of the monthly surveys might be more nearly complete and the surveys as a whole in better balance, there are included a large number of returns from employers who do not come within the major industries, trades or classes of employment in Massachusetts. It has been possible to group nearly all of these miscellaneous returns into distinct but relatively small classes. For the reporting week in December, 1939, reports were received from 743 miscellaneous companies, representing 930 units or branches, with 39,080 wage-earners employed, and a total weekly pay roll of $837,628, with detailed data for 15 classes.

For 13 of the 15 classes so grouped, index numbers of employment and amounts paid in wages have been computed, and are shown in Table 11. The quarrying and non-metallic mining group was added in January, 1937, and the brokerage companies were shown separately for the first time in February, 1939, but no index numbers have been computed for these two groups because of the lack of data to serve as bases. In each of 11 of the 13 classes for which index numbers are presented, employment for the year 1939 as a whole was somewhat greater than for 1938, more particularly in agricultural employment, express and transfer companies, and general trucking and stevedoring. In each of the 13 classes, except clubs and associations, there were also increases in the amounts paid in wages. Seasonal characteristics are noted upon reference to the series for agricultural employment, clubs and associations, dyers and cleansers, express and transfer companies, general trucking and stevedoring, hotel restaurants, laundries, and schools and colleges.

Certain of the employees of clubs and associations, hospitals, hotels and hotel restaurants receive subsistence in the nature of meals, board, lodgings, etc., in addition to stipulated salaries or wages, but such payments "in kind" are not considered in this survey. Reports from hospitals and from schools and colleges include office employees, and those employed in buildings and on the grounds, but do not include the professional or semi-professional personnel, or members of the teaching staffs in schools and colleges.

Table 11.—Index Numbers of Employment and Amounts Paid in Wages in Thirteen Miscellaneous Classes of Employment in Massachusetts: By Years, 1932-1939, Inclusive, and by Months in 1939.

(Source:—Monthly Survey of Miscellaneous Classes of Employment)
(Base:—September, 1931=100.0)

Years and Months	Agriculture	Banks and Trust Companies	Clubs and Associations	Dyers and Cleansers[1]	Express and Transfer Service	General Trucking and Stevedoring	Hospitals	Hotel Restaurants[2]	Hotel Service	Insurance Companies and Agencies	Laundries	Schools and Colleges	Theatres
Employment													
1932	68.3	93.6	97.1	88.8 [1]	79.4	83.1	99.3	88.2	92.1	99.8	95.6	96.8	72.9
1933	58.0	87.1	88.9	80.3	98.1	83.6	97.9	79.3	77.8	100.4	93.9	82.4	49.2
1934	57.7	86.8	86.7	82.4	107.5	84.2	99.4	94.6	72.4	105.3	93.4	77.5	50.9
1935	56.3	87.1	79.7	87.7	113.8	85.2	99.5	73.9	73.0	107.9	92.1	73.9	46.7
1936	49.4	88.0	89.4	93.4	113.3	85.3	107.9	80.4	77.8	110.4	91.4	77.5	45.3
1937	45.6	89.5	95.0	90.6	114.2	85.0	118.2	84.0	76.5	111.9	95.6	84.6	48.9
1938	43.1	89.7	93.7	81.5	107.6	73.3	123.6	81.6	72.9	115.4	93.0	92.1	50.7
1939	66.4	90.3	94.5	83.9	112.8	82.7	125.5	80.9	63.0	118.2	93.9	94.4	53.1
1939													
January	32.7	89.7	99.2	75.9	115.6	84.9	124.9	82.9	61.2	118.3	92.1	100.4	51.9
February	29.1	89.5	99.5	75.8	106.5	85.1	126.3	85.6	62.2	117.8	91.1	101.4	52.6
March	65.0	89.6	99.9	77.2	107.8	84.0	125.0	81.9	62.3	117.7	90.4	101.0	52.9
April	80.7	89.4	98.2	83.7	106.2	75.5	126.1	83.5	63.5	117.9	91.7	102.9	53.1
May	79.2	89.5	95.1	86.2	112.7	80.2	126.2	82.0	64.7	117.2	92.9	102.2	53.7
June	74.4	89.9	86.5	91.1	112.0	82.2	127.0	82.7	65.1	117.0	95.2	95.9	52.5
July	67.7	91.2	83.0	88.7	104.5	80.9	129.8	70.9	67.2	118.9	97.7	69.1	51.3
August	121.9	91.5	80.0	88.1	104.7	76.7	129.4	71.3	67.9	119.4	97.3	64.1	52.4
September	106.3	90.9	89.6	87.8	108.3	85.5	122.5	74.1	63.6	118.8	95.8	93.5	54.3
October	62.0	90.6	101.3	86.9	114.5	85.8	123.1	84.1	61.6	117.4	94.9	102.1	54.5
November	44.2	90.9	99.3	84.1	123.1	81.9	123.1	82.4	58.3	118.7	93.8	99.6	53.5
December	33.6	90.9	102.9	81.5	137.5	89.8	123.1	89.7	58.8	119.6	93.4	100.5	54.1
Amount Paid in Wages													
1932	45.6	89.5	93.7	77.0 [1]	69.0	76.9	98.4	79.8	89.1	99.7	87.2	76.3	75.7
1933	37.4	81.2	78.8	66.2	79.8	77.4	95.1	62.5	70.2	102.6	78.6	57.7	48.5
1934	32.1	81.0	78.0	78.9	85.0	85.8	102.1	84.9	76.8	106.9	81.3	54.5	49.8
1935	31.1	82.6	74.0	80.7	93.7	93.3	108.4	78.6	82.3	111.5	79.7	53.2	47.5
1936	29.3	83.2	84.2	83.7	96.1	97.6	117.9	85.9	83.7	115.1	79.4	54.2	45.6
1937	30.6	85.9	93.4	88.1	102.8	105.5	130.9	91.3	84.5	115.4	84.9	57.7	45.8
1938	28.5	88.8	94.7	82.6	93.3	87.1	143.0	90.3	84.2	120.1	82.9	59.9	48.8
1939	47.1	90.0	88.1	84.8	101.5	103.5	152.7	91.7	77.0	124.3	86.2	61.1	50.6
1939													
January	23.0	89.8	97.6	72.5	96.9	101.1	148.5	95.0	74.4	124.0	83.1	65.8	49.5
February	21.3	89.6	98.0	71.1	95.7	103.7	150.7	97.0	74.8	124.2	82.3	65.2	50.1
March	43.5	89.6	98.1	70.9	95.0	104.4	151.5	93.0	74.2	124.1	81.5	65.6	50.2
April	58.6	89.9	97.0	85.5	92.1	87.1	151.8	93.1	75.3	124.6	83.6	66.4	51.3
May	52.8	89.8	97.7	94.7	102.5	98.4	150.7	91.9	77.1	123.7	86.4	66.1	50.4
June	48.1	89.7	95.7	102.8	103.3	100.9	155.7	93.6	77.3	123.7	90.2	64.1	49.3
July	42.2	90.9	90.4	92.4	92.5	102.3	157.6	82.2	82.7	125.7	91.8	51.3	48.2
August	66.5	90.8	88.2	89.4	91.9	98.1	157.3	80.6	83.4	124.7	90.1	48.3	49.3
September	85.6	90.3	93.3	91.6	98.6	113.4	151.6	87.8	79.8	124.5	86.6	62.2	51.5
October	53.1	89.8	98.3	85.7	103.4	113.4	151.8	95.4	76.5	123.6	86.9	68.0	54.0
November	40.0	89.8	100.6	82.9	112.3	105.8	152.6	91.7	73.7	124.0	85.5	67.3	51.2
December	30.5	90.1	100.5	77.8	133.7	112.9	152.3	98.9	74.7	125.1	86.4	67.4	51.7

[1] The survey of dyers and cleansers was first undertaken in May, 1932. In computing the series of index numbers, the level of employment in May, 1932, was assumed to be the same as for laundries. The average shown for 1932 is for the eight months, May to December, inclusive.

[2] See Table 6 for index numbers for lunch rooms and restaurants not in hotels.

Building Statistics. Beginning with January, 1927, monthly reports relative to building permits granted have been received from each of 55 municipalities in Massachusetts. The reports cover approximately 80 per cent of the building operations in the state and relate to municipal and private construction and to state and federal buildings. Summaries of the returns are issued each month in mimeographed form, and an annual summary is also prepared. The questionnaire used in the collection of this information calls for the number of applications filed for permits to build, the estimated cost of the work, classified by types of building and intended use, and the number of family accommodations to be provided. Copies of the reports for each of the 55 municipalities and for 34 additional towns are forwarded to the U. S. Bureau of Labor Statistics for inclusion in its nation-wide summaries.

In Table 12 data are presented in summary form showing the returns for 55 municipalities, combined, for the year 1939, and the number and cost of the different classes of structures. The data for new residential buildings are classified in two major groups,—housekeeping dwellings and non-housekeeping dwellings. Housekeeping dwellings are further sub-divided into one-family, two-family, and multi-family dwellings, combined stores and dwellings, and camps. The number of family accommodations provided in each of the four classes of new residential buildings is also shown. Non-housekeeping dwellings include club and association buildings with bedrooms, hotels, lodging houses, etc. New non-residential buildings are classified so as to show, separately, data for each of 14 important classes of structures. For additions, alterations and repairs, totals only are presented.

Table 12.—Summary of Prospective Building in Fifty-five Municipalities in Massachusetts in 1939: By Class of Structures.

I—New Residential Buildings

Classes of Structures	Number of Dwellings	Estimated Cost of Dwellings	Number of Family Accommodations
Housekeeping Dwellings:			
One-family	3,224	$16,020,655	3,224
Two-family	149	967,718	298
Multi-family	79	2,148,450	673
Dwellings and stores combined	10	76,000	11
Camps	136	67,602	—
Totals, All Housekeeping Dwellings	3,598	$19,280,425	4,206
Non-housekeeping Dwellings (all classes)	2	455,000	—
Totals, New Residential Buildings	**3,600**	**$19,735,425**	**4,206**

II—New Non-residential Buildings

Classes of Structures	Number of Buildings	Estimated Cost	Rank on Basis of Cost
Amusement and recreation places (including club buildings without bedrooms)	60	$1,217,732	6
Churches, chapels, and parish houses	17	851,559	8
Factories, bakeries, ice-plants, greenhouses, laundries, and other workshops	116	1,384,490	4
Garages, public	32	229,090	12
Garages, private	2,562	927,328	7
Gasoline and service stations	210	744,279	9
Institutional buildings	23	1,637,800	3
Office buildings, including banks	43	681,012	10
Public buildings, including libraries and museums	4	196,141	14
Public works and utilities	25	1,342,120	5
Schools, grade and high (public and private)	10	3,056,539	1
Sheds, poultry houses, and other minor outbuildings	819	214,476	13
Storage warehouses, coal pockets, lumber shed, etc.	105	371,892	11
Stores, restaurants, and other mercantile buildings	217	1,696,580	2
All other non-residential buildings	31	24,353	15
Totals, New Non-residential Buildings	**4,274**	**$14,575,391**	—

III—Additions, Alternations and Repairs

Classes of Structures	Number of Buildings	Estimated Cost	
Totals—Additions, Alterations and Repairs	**15,877**	**$15,168,187**	—

Of the estimated cost of all residential buildings ($19,735,425) for which permits were granted in the 55 municipalities in 1939, $16,020,655, or 81.2 per cent, was for one-family dwellings; $2,148,450 or 10.9 per cent, was for multi-family dwellings; $967,718, or 4.9 per cent, was for two-family houses, $455,000, or 2.3 per cent, was for non-housekeeping dwellings, and $143,602, or 0.7 per cent, was for dwellings and stores combined, and camps. The total number of family accommodations to be provided was 4,206, of which 3,224 or 76.6 per cent, were in one-family dwellings; 673, or 16.0 per cent, were in multi-family houses; 298, or 7.1 per cent, were in two-family houses; and 11 were in dwellings and stores combined. In 25 of the 55 municipalities all of the family accomodations provided were in one-family dwellings.

The total number of new non-residential buildings planned in 1939 was 4,274, the estimated cost of which was $14,575,391. The six principal classes, on the basis of estimated cost, were: 10 schools, grade and high (public and private), $3,056,539; 217 stores, restaurants, and other mercantile buildings, $1,696,580; 23 institutional buildings, $1,637,800; 116 factories, bakeries, ice-plants, greenhouses, laundries, and other workshops, $1,384,490; 25 public works and utilities,$1,342,120; and 60 amusement and recreation places (including club buildings without bedrooms), $1,217,732.

The estimated cost of additions, alterations and repairs for which permits were granted in the 55 municipalities in 1939 amounted to $15,168,187. The number of such permits was 15,877, which included both residential and non-residential buildings.

Table 13.—Estimated Cost of Building Construction in 27 Leading Municipalities in Massachusetts in 1939: By Classes of Work.

Municipalities	New Residential Building	New Non-Residential Building	Additions, Alterations, and Repairs	Total
Arlington	$985,460	$29,065	$138,403	$1,152,928
Belmont	888,250	188,835	67,590	1,144,675
Boston	2,485,650	2,067,849	3,905,994	8,459,493
Braintree	256,175	27,745	235,344	519,264
Brookline	1,422,700	104,900	333,515	1,861,115
Cambridge	114,300	2,101,451	739,065	2,954,816
Fall River	192,600	217,298	148,221	558,119
Fitchburg	152,550	312,859	196,564	661,973
Haverhill	48,080	330,210	226,565	604,855
Lawrence	128,550	123,875	565,365	817,790
Lowell	123,000	126,192	259,326	508,518
Lynn	286,000	263,250	455,264	1,004,514
Malden	69,400	151,616	1,288,798	1,509,814
Milton	568,900	47,315	81,521	697,736
Needham	634,700	24,600	106,405	765,705
New Bedford	77,200	474,235	289,953	841,388
Newton	2,323,660	389,137	245,210	2,958,007
Northampton	59,400	626,507	62,161	748,068
Pittsfield	496,650	110,825	326,365	933,840
Quincy	654,470	758,072	873,710	2,286,252
Salem	135,350	80,210	314,718	530,278
Springfield	687,000	2,201,900	612,107	3,501,007
Waltham	517,225	321,785	175,038	1,014,048
Watertown	171,600	282,200	96,605	550,405
Wellesley	1,246,150	205,250	133,250	1,584,650
Winchester	445,740	15,400	79,908	541,048
Worcester	1,570,233	934,706	995,591	3,500,530

In each of 27 municipalities the estimated cost of the work for which permits were granted in 1939 exceeded $500,000. The data for each of these cities, by classes of work, are presented in Table 13. Boston far outranked all other municipalities specified in the total estimated cost of all classes of construction. In six of the municipalities the amounts exceeded two million dollars, as follows: Boston, $8,459,493; Springfield, $3,501,007; Worcester, $3,500,530; Newton, $2,958,007; Cambridge, $2,954,816; and Quincy, $2,286,252. About two-thirds of all construction work planned was in the metropolitan Boston area.

On the basis of the estimated cost of new residential buildings in 1939, Boston led all other municipalities with $2,485,650. Newton was a close second with $2,323,660, and Worcester was third with$1,570,233. In non-residential construction wide variations were noted as large individual projects had considerable effect on the totals. In Boston the estimated cost of additions, alterations and repairs exceeded by $1,420,344 the value of new residential construction planned, and exceeded by $1,838,145 the value of new non-residential construction planned.

In Table 14 summary data are presented showing by classes of projects the number and estimated cost of the three major classes of construction for which permits were granted during each of the years 1927-1939, inclusive, and by months in 1939.

Table 14.—Number and Estimated Cost of Building in 55 Municipalities in Massachusetts: By Years, 1927-1939, Inclusive, and by Months in 1939; By Classes of Projects.

Years and Months	New Residential Building	New Non-Residential Building	Additions, Alterations, And Repairs	Totals—All Classes of Projects
Number of Buildings				
1927	11,418	14,231	18,666	44,315
1928	10,580	12,967	17,184	40,731
1929	6,759	12,039	17,607	36,405
1930	4,931	9,615	16,417	30,963
1931	4,587	8,392	16,210	29,189
1932	1,806	5,134	14,115	21,055
1933	1,786	4,188	13,495	19,469
1934	1,314	3,800	14,254	19,368
1935	1,800	3,978	16,362	22,140
1936	2,935	4,474	16,996	24,405
1937	3,423	4,574	16,570	24,567
1938	3,059	4,114	17,706	24,879
1939	3,600	4,274	15,877	23,751
Number of Buildings in 1939: By Months				
1939				
January	159	162	788	1,109
February	164	119	689	972
March	208	263	1,085	1,556
April	324	389	1,397	2,110
May	377	480	1,806	2,663
June	385	457	1,680	2,522
July	364	399	1,593	2,356
August	328	425	1,670	2,423
September	313	443	1,487	2,243
October	373	524	1,511	2,408
November	371	392	1,288	2,051
December	234	221	883	1,338
Totals, 1939	3,600	4,274	15,877	23,751
Estimated Cost				
1927	$101,959,226	$51,765,595	$27,574,615	$181,299,436
1928	96,878,609	52,047,563	22,122,372	171,048,544
1929	69,936,017	53,945,280	29,774,203	153,655,500
1930	40,146,313	45,173,157	22,033,838	107,353,308
1931	32,956,935	38,495,601	14,240,473	85,693,009
1932	9,797,266	11,800,136	10,771,930	32,369,332
1933	9,513,475	5,646,159	9,859,614	25,019,248
1934	7,399,030	10,367,863	11,937,370	29,704,263
1935	10,893,651	12,854,240	13,036,665	36,784,556
1936	18,019,877	13,806,670	16,214,293	48,040,840
1937	21,736,137	20,702,398	17,417,605	59,856,140
1938	16,090,793	17,474,975	15,395,045	48,960,813
1939	19,735,425	14,575,391	15,168,187	49,479,003
Estimated Cost in 1939: By Months				
January	$1,278,580	$2,144,955	$1,682,291	$5,105,826
February	1,028,560	647,681	620,347	2,296,588
March	1,101,775	1,835,744	1,380,812	4,318,331
April	1,652,300	743,678	1,126,321	3,522,299
May	2,026,765	583,508	1,466,229	4,076,502
June	1,816,152	1,660,007	1,255,646	4,731,805
July	2,265,145	2,216,603	1,578,705	6,060,453
August	1,605,468	673,878	1,313,773	3,593,119
September	1,672,370	1,020,723	1,084,599	3,777,692
October	1,897,800	1,299,863	1,318,708	4,516,371
November	1,913,560	1,261,448	1,519,793	4,694,801
December	1,476,950	487,303	820,963	2,785,216
Totals, 1939	$19,735,425	$14,575,391	$15,168,187	$49,479,003

Special Investigations

Of the special investigations undertaken by the division during the year 1939, four were of such importance as to justify brief descriptions with reference to their scope and contents. These special investigations made necessary the assignment of a part of the clerical staff to the tabulation of official records already available or obtained by special canvassing in the field.

Shift Operations of Textile Mills in Massachusetts. For use in conferences relative to overtime operation in the textile mills in Massachusetts, particularly as to whether or not such mills were being operated on two or more shifts, inquiry forms were sent to all textile mills in Massachusetts, requesting information as to the number of shifts operated, the number of wage-earners employed on each shift in the productive departments, the time at which each shift began and ended, and the total number of hours of operation of each shift during the first full week in November, 1939.

An inquiry form, with an explanatory letter, was sent to each of the 462 textile mills in the State. A report was received from each of 423 mills which were in operation during the week specified, and from 39 mills a notice was received stating that the mill was not in operation at that time. The individual returns received were held confidential but were tabulated in such form as not to disclose the operations of individual establishments. The time required in making this inquiry amounted to approximately 15 man-days for clerks and stenographers and 25 man-days for statistical investigators.

Number of Wage-Earners in the Manufacturing Industries in Massachusetts Affected by the "Fair Wages Act." In order to determine the number of wage-earners in the manufacturing industries in Massachusetts who would be effected by federal legislation establishing minimum rates of wages and maximum hours of labor for employees engaged in interstate commerce, pay-roll records received from representative manufacturing establishments in Massachusetts were tabulated so as to show the relation between the hourly earnings of the employees and the number of man-hours worked. The results were not published but were used in answering inquiries relative to the probable effect of such legislation on October 24, 1939, when the minimum rate of wages would become 30 cents per hour and the number of hours per week before overtime rates would be payable would become 42.

Plant Capacity Available for Expansion in Manufacturing Establishments in Massachusetts. At the request of the Commissioner a special tabulation of records on file was made in order to ascertain how many additional wage-earners could be employed in manufacturing establishments in Massachusetts without providing for additional space and equipment. From these records it was possible to compute the number of wage-earners employed in October, 1939, and the largest number employed in the same establishments in any month during the past five years. The difference between the largest number and the number employed in October was assumed to represent the additional number who could be employed without any increase in factory space and equipment. The time required in tabulating the data and preparing a report of the results was approximately 80 clerical hours.

Industrial Activities in Cities and Towns Served by the Old Colony and Providence Divisions of the New York, New Haven and Hartford Railroad. The facilities of the office were accorded two representatives of the Division of Research and Statistics of the New York, New Haven and Hartford Railroad, in connection with a survey of industrial activities in recent years in the cities and towns served by the Old Colony and Providence Divisions of the New Haven Railroad.

The survey involved the tabulation of data relative to wage-earners and production in the manufacturing establishments in the cities and towns in the area considered, during the period, 1919-1938, inclusive. It was necessary to furnish the railroad representatives with some clerical assistance in order that

the material secured from official records in the division might be presented in such form as not to disclose the operations of individual establishments and yet in as comprehensive and detailed a manner as possible, having in mind the purpose for which it was intended.

Statistics of Strikes in Massachusetts, 1927 - 1939.

The Division of Statistics maintains a record of strikes which occur in Massachusetts and cooperates with the Bureau of Labor Statistics of the U. S. Department of Labor in this work. The original records, furnished to the division by the Massachusetts Board of Conciliation and Arbitration, are supplemented by further information obtained from other sources. These preliminary records are forwarded at intervals to the federal office, from which office inquiry forms, relative to the strikes, are sent to employers and labor organizations concerned, in order to verify the original records, and to secure information in further detail. In some cases, where the federal office is unable to secure information by correspondence, the statistical investigators in the Division of Statistics visit the employers and officials of labor organizations in order to secure the desired information for the federal bureau.

On completion of the records for the year, the data are tabulated, and any variations between the records of the federal bureau and this office are adjusted, in order that the final returns may be the same for each office.

The following is a record of strikes in Massachusetts during the period 1927-1939.

Table 15.—Statistics of Strikes in Massachusetts, 1927-1939.

(Source—U. S. Department of Labor, Bureau of Labor Statistics)[1]

Years	Number of Strikes Beginning in Year	Workers Involved			Man-Days Idle	
		Number	Per Cent of Total in U. S.	Average Number per Strike	Number	Per Cent of Total in U. S.
1927	68	10,779	3.3	159	162,157	0.6
1928	90	46,865	14.9	521	4,008,413	31.7
1929	78	23,673	8.2	304	862,300	16.1
1930	45	5,274	2.9	117	61,563	1.9
1931	63	47,954	14.0	761	1,106,746	16.1
1932	65	9,763	3.0	150	130,996	1.2
1933	161	88,754	7.6	551	1,411,408	8.4
1934	112	116,422	7.9	1,039	1,339.084	6.8
1935	110	26,321	2.4	239	605,188	3.9
1936	111	34,193	4.3	308	432,223	3.1
1937	277	55,360	3.0	200	602,037	2.1
1938	123	14,941	2.2	121	184,914	2.0
1939	116	34,832	3.0	300	364,417	2.0

[1] The statistics presented in Table 15 are as published by the U. S. Department of Labor, Bureau of Labor Statistics, and, for the years 1935-1939, are in full agreement with the records compiled by the Division of Statistics in the Massachusetts Department of Labor and Industries.

The total number of strikes which occurred in Massachusetts in 1939 was 116, or seven less than the number (123) in 1938, but there was an increase in the number of workers involved, from 14,941 in 1938 to 34,832 in 1939, and also an increase in the number of man-days idle as a result of strikes, from 184,914 in 1938 to 364,417 in 1939.

The number of workers involved in the 116 strikes in Massachusetts in 1939 was 34,832, or only 3.0 per cent of the total number of workers (1,171,000) involved in the 2,613 strikes in the United States in that year, and the number of man-days idle as a result of the strikes in Massachusetts was 364,417, or only 2.0 per cent of the total number of man-days idle (17,812,000) as a result of the strikes in the United States in 1939. According to the United States census of population taken in 1930 (the latest year for which the data are available) the total number of persons "gainfully employed" in Massachusetts was 1,814,315, which number constituted 3.7 per cent of the total number of

persons "gainfully employed" in the United States in 1930 (48,829,920). A comparison of the percentages above given indicates that the number of workers involved in the strikes and the number of man-days idle as a result of the strikes in Massachusetts in 1939 were proportionately less than the corresponding numbers for the United States as a whole.

With a few exceptions the strikes in Massachusetts in 1939 involved relatively small numbers of workers and were of short duration.

Information Service

Special Inquiries.—The answering of requests for information relative to the industries of the commonwealth, rates of wages, hours of labor and conditions of employment is an important part of the work of the division. A record of such inquiries is kept each year, and the number which required special attention in 1939, other than merely the sending of a marked copy of a printed or mimeographed report, was 999, of which number 204 were of such a nature as to require the making of special tabulations of information on file in the division, and 795 of which were answered directly from the reference library. There has been a continuous increase in the demand for information during recent years, the number of special inquiries having increased from 482 in 1934 to 999 in 1939.

Of the 204 inquiries involving the special tabulation of information not published in reports of the division, the following were the most important:

Changes in manufacturing establishments in Massachusetts, 1930-1938
Shift operations of textile mills in Massachusetts in 1939
Number of wage-earners in the manufacturing industries in Massachusetts affected by the "Fair Wages Act"
Plant capacity available for expansion in manufacturing establishments in Massachusetts
Industrial activities in cities and towns served by the Old Colony and Providence Divisions of the New York, New Haven and Hartford Railroad
Compilation of statistics of strikes in Massachusetts in 1939
Weekly wages of employees in savings banks in Massachusetts, 1932-1939
Recent trends in principal industries and municipalities in Massachusetts
Statistics of manufactures in principal industries and municipalities in Massachusetts

Reference Library—The Department maintains a reference library, primarily for the use of members and officials of the department, in order that they may be apprised of currently enacted or proposed legislation affecting or of interest to the department, and of news items and articles in the daily press and in the latest publications dealings with labor and industrial matters. Current state legislative bills and resolves are kept on file for ready reference. Numerous pamphlets, books, and mimeographed material, issued by other state departments, the federal bureaus, the International Labor Office, labor organizations, commercial and industrial organizations, etc., are received on an exchange basis. The library includes upwards of 4,000 bound volumes, in addition to the various reports in other form. There are received currently 24 quarterly publications, 274 monthly publications, and 63 weekly and 14 daily newspapers. Clippings from these various sources are referred daily to the interested departmental officials.

The reference library serves not only departmental members and officials, but is open to the public and is used extensively by individuals, industrial organizations, labor officials, etc.; and many students of economics and similar subjects in nearby schools and colleges find the library invaluable. Through inter-library loans with the State Library, the Boston Public Library, and the libraries of Harvard University and Massachusetts Institute of Technology, material is readily accessible on many subjects on which our files are not complete.

Subjects of special interest during the year were: Fair Labor Standards Act; social security laws and regulations; cost of living; Public Contracts Act; prevailing rates of wages on public works; National and State Labor Relations Boards; minimum wages; employment of women and children in industry; industrial home work; advantages of cities and towns for market surveys; reciprocal trade pacts; employment and unemployment; occupational diseases and industrial poisons; apprenticeship; building permits; migration of industries; and labor legislation.

During the course of the year there were 795 recorded inquiries from the general public, but no statistical presentation could be made of the extensive service rendered by the library to the members of the department. The library staff consists of the librarian, an assistant, and temporary clerical service provided by the National Youth Administration.

Departmental Statistical Project—National Youth Administration

The National Youth Administration Project providing for the employment of young persons, 18 to 25 years of age, on statistical and clerical work in the department, which was started in April, 1936, has been continued, without interruption, and with some increase in the number employed. This project was set up as a general departmental project, because none of the divisions of the department could furnish employment for a sufficiently large number of young persons to justify setting up a separate project in each division. Arrangements were made for the transfer of these young persons from one division to another as occasion might require. The general sponsorship of the project was assigned to the Director of Statistics.

In 1939 the regulations provided for the employment of clerks, each working fifty-five hours per month, and a supervisor for not less than thirty-nine hours per week. Beginning July 1, 1939, the National Youth Administration became a Federal Security Agency, at which time monthly instead of semi-monthly pay rolls were adopted. The N. Y. A. provides work training courses for the young people. Each one is required to take two two-hour courses, unless attending night school. The average number of persons employed during the year was 33. The total number of hours worked during the year by these young persons, including the supervisor, was 22,186 and the total amount of the pay rolls was $9,523.07, or an average of 42.9 cents per hour.

About 95 different individuals were employed on this project for some time during the year.

There were 55 changes in the personnel during the year. Thirty-two secured positions in private employment, twelve were transferred to other projects, and eleven left because of illness, marriage, or other reasons.

Those employed were engaged, for the most part, in the following classes of work:

Division of Statistics: Clerical work, including transcribing statistical records; stencil cutting, typing and operating office appliances.

Minimum Wage Commission: Operating calculator, mimeographing, stenography, typing and filing.

Division of Industrial Hygiene: Listing of references, preparation of library card system, stenography, typing, and statistics.

Board of Conciliation and Arbitration: Listing and filing reports of strikes, labor difficulties, and stenography.

Research Library: General library work, clipping service, stenography and typing.

Industrial Safety: Stenography, mimeographing, computation, typing and filing.

Switchboard: Relieving regular operator at various times.

The employment of these young people has not resulted in the displacement of any of the regular employees in the department. In addition to the service

which they have rendered to the department, they have been able to secure training and experience in office work, which should prove useful to them. The fact that 32 of those assigned to work in the department have secured positions in private employment is evidence, to some extent, of the value of the practical training which they have received while employed in the department.

Preservation of Reports of Census of Manufactures

Beginning in 1886, and in each year thereafter, a census of manufactures in Massachusetts has been taken, as required by law. The original act, providing for the taking of the annual census in Massachusetts, was Chapter 174 of the Acts of 1886. This act has since been amended in certain particulars, but the provisions of the law now in effect with reference to this subject (General Laws, Chapter 149, Sections 171 and 172) are substantially in the same form as the original act.

Copies of the original reports from manufacturers received during the entire period 1886 to 1938, inclusive, a period of over 50 years, are on file in the division. These reports furnish a valuable historical record of the industrial history of the commonwealth, and are unique in that Massachusetts is the only state in the United States having a continuous series of annual census data of this nature.

In order that these reports may be permanently filed in such form as to render it possible to refer readily to reports for individual establishments and for specific industries, localities and periods of time, the filing system is being revised, and individual index cards for each establishment in operation in the state at any time during the period are being prepared.

This work was undertaken in September, 1938, as a part of the general "Obsolete Records Project" for the entire state. The division has been very fortunate in securing the services of competent persons furnished by the Works Progress Administration. From September, 1938, until June, 1939, from three to five persons were employed on this work, and from June 1939 until September, 1939, 10 persons were so employed. In order to expedite the work, the number employed was increased in September, 1939, and has since varied from 30 to 40 persons, and it is belived that the entire project will be completed not later than the end of May, 1940. Space has been provided in the state house for the employment of those engaged on the work, and since September, 1939, a large hearing room has been assigned by the Sergeant-at-Arms for this purpose. Except for index cards and a very limited amount of office supplies, the direct cost to the commonwealth in connection with this project has been very small.

CENSUS OF MANUFACTURES, 1938

Introductory

Data presented in this section of the report were compiled from returns received from manufacturers in Massachusetts in connection with the Census of Manufactures for the year 1938, which Census was the fifty-third of a continuous series of annual censuses in Massachusetts, the first one having been taken in 1886.

The total number of manufacturing establishments, coming within the scope of the Census, in operation in Massachusetts in 1938, excluding those in which the value of products manufactured during the year was less than 5,000, was 8,570, as compared with 8,718 in 1937. The total value of products manufactured during the year in these establishments was $2,054,865,331; the cost of stock and materials used in manufacture amounted to $1,007,806,958, and the difference between these amounts ($1,047,058,373) represents the *value added* by the various manufacturing processes.[1]

[1]See Table 16 on page 67.

The totals for 1938 as compared with corresponding totals for 1937, after eliminating data for 126 publishing establishments which did no printing and were included in the 1937 totals, but not canvassed in connection with the Census for 1938, showed decreases as follows: value of stock and materials used, 24.7 per cent; amount of wages paid during the year, 18.8 per cent; average number of wage-earners employed, 14.7 per cent, and value of products, 21.3 per cent. It is to be noted with respect to the number of establishments, that although a net loss of 148 is indicated in 1938 as compared with 1937, the actual loss, excluding the publishing establishments referred to above, was only 22.

There were decreases in the average number of wage-earners employed in all of the major industries except men's and women's clothing, including men's work clothing; and ship and boat building, steel and wooden, in which industries, slight increases were indicated. There were decreases in the amount of wages paid in all of the major industries except men's and women's clothing, including men's work clothing; ship and boat building, steel and wooden; and meat packing, wholesale. In the latter-named industry, although a slight increase in the total amount of wages paid during the year was evidenced, a slight decrease was indicated in the average number of wage-earners employed.

The downward trend in wage-earner employment, which first became apparent in the last quarter of 1937, continued through June of 1938, when the low point in employment for the year was reached (396,389). Slight fluctuations were evident between the months of January and June, but in August of 1938, the first decided swing upward became apparent. This trend continued through November, with a slight falling off in December. The total number of wage-earners employed in *"all industries"* in November, which was the month of employment of the greatest number during the year, was 451,443, as compared with 528,460 wage-earners employed in April, 1937, which was the month of greatest employment in that year.

Decreases in the dollar-value of production in 1938 as compared with 1937 occurred in each of the major industries except ship and boat building, steel and wooden, in which the dollar-value of production showed an appreciable increase.

In the cities of Gloucester, Newburyport, and Quincy increases in the value of products manufactured in 1938 over 1937 were reported, and in the other 36 cities, decreases were indicated. In the cities of Melrose, Newburyport, and Quincy increases in the average number of wage-earners employed in 1938 over 1937 were indicated, and in the cities of Gloucester, Melrose, Newburyport, and Quincy increases in the total amount of wages paid were reported. The average number of wage-earners employed and total amount paid in wages decreased in each of the other cities of the state.

The results of the tabulation of the manufacturers' returns were issued in the form of press announcements for each of the cities and for some of the larger towns in the state. A description of all press announcements issued is given below:

Nos. 1-39. *Individual Cities.* A separate press notice for each of the 39 cities containing data, by important industries, in 1938 with comparable data for specified industries for certain prior years.

No. 40. *Summary by Cities and Towns.* Totals only for each city and town, 1938.

No. 41. *General Summary for the State.* Principal data by years, 1928 to 1938.

No. 42. *Metropolitan Boston.* Principal data for the years 1928 to1938.

No. 43. *Summary by Industries.* Principal data for leading industries, 1938, with comparable data for all industries for the years 1928 to 1938.

No. 44. *Counties.* Principal data for counties, 1938.

Nos. 45-57. *Special Towns.* A separate press notice for each of the following important industrial towns: Adams, Andover, Athol, Braintree, Framingham, Hudson, Norwood, Plymouth, Southbridge, Walpole, Watertown, Webster, and West Springfield.

Summary of Principal Data, 1913 to 1938

All Industries Combined. In order to show the general industrial trends in Massachusetts for a series of years, principal data for all manufacturing industries combined for the years 1913 to 1938, inclusive, are presented in Table 16. In making comparisons for the several years of the money values presented in this summary, due allowance should be made for price fluctuations from year to year. The *values* of products manufactured do not necessarily represent the relative *volume* of goods produced in the several years.

The State. In Table 17 principal data for 1938 are presented for each of the industries in which there were three or more establisments represented and for which data can be shown without disclosing the operations of individual establishments.

Table 16.—Principal Data Relative to Manufactures in Massachusetts, All Industries Combined: By Years, 1913-1938, Inclusive.

Years	Number of Establishments	Capital Invested	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products	Value added by Manufacture
1913	8,405	$1,345,461,875	$961,778,476	$351,299,706	616,927	$1,658,728,363	$696,949,887
1914	12,013[1]	1,548,960,733	931,383,793	341,309,517	606,698	1,641,373,047	709,989,254
1915	9,707	1,550,080,995	959,662,457	346,243,472	596,348	1,692,445,366	732,782,909
1916	9,829	1,791,050,092	1,354,433,202	447,957,731	682,621	2,349,933,003	995,499,801
1917	9,865	2,239,848,630	1,782,440,354	537,144,629	708,421	3,020,557,545	1,238,117,191
1918	9,695	2,510,730,295	2,249,822,722	679,401,273	719,210	3,851,346,215	1,601,523,493
1919	11,906[1]	2,962,108,527	2,260,713,036	766,623,337	713,836	4,011,181,532	1,750,468,496
1920	10,262	2,987,620,867	2,489,237,446	891,176,822	695,832	4,370,276,822	1,881,039,376
1921	9,994[1]	[2]	1,441,035,230	641,360,936	579,071	2,849,413,516	1,408,378,286
1922	10,056	2,822,014,756	1,512,510,105	678,073,968	612,682	3,002,625,958	1,490,115,853
1923	10,519[1]	[2]	1,835,218,349	799,363,111	667,443	3,570,543,265	1,735,324,916
1924	10,174	2,853,590,206	1,629,342,134	711,812,104	589,364	3,126,137,145	1,496,795,011
1925	10,027[1]	[2]	1,794,643,051	716,155,593	591,438	3,426,617,326	1,631,974,275
1926	9,903	2,819,189,700	1,790,611,294	738,208,510	602,343	3,419,814,877	1,629,203,583
1927	10,037[1]	[2]	1,678,812,411	705,929,549	578,068	3,317,851,888	1,639,039,477
1928	9,971	2,735,070,138	1,663,155,564	670,063,291	540,927	3,224,227,651	1,561,072,087
1929	9,872[1]	[2]	1,681,432,788	694,805,312	557,494	3,392,162,237	1,710,729,449
1930	9,586	2,483,589,920	1,333,317,227	573,838,044	481,449	2,676,387,256	1,343,070,029
1931	9,305[1]	[2]	1,015,093,739	474,189,202	434,441	2,157,450,449	1,142,356,710
1932	8,778	1,888,244,721	718,347,675	334,358,550	350,521	1,521,752,939	803,405,264
1933	8,145[1]	[2]	800,611,332	354,523,624	398,592	1,668,733,387	868,122,055
1934	8,336	1,825,540,470	924,075,172	408,617,489	423,933	1,855,598,291	931,523,119
1935	8,517[1]	[2]	1,078,869,946	448,326,676	445,519	2,103,691,437	1,024,821,491
1936	8,685	1,803,555,232	1,230,882,709	514,599,251	481,432	2,437,520,795	1,206,638,086
1937	8,718[1]	[2]	1,338,771,937	559,246,370	498,602	2,623,115,728	1,284,343,791
1938	8,570	1,741,500,878	1,007,806,958	453,940,826	425,157	2,054,865,331	1,047,058,373

[1] The Census of Manufactures for the years 1914, 1919, 1921, 1923, 1925, 1927, 1929, 1931, 1933, 1935, and 1937 included certain publishing establishments not canvassed in the other years specified, and data for these years, therefore, are not strictly comparable with corresponding data for the other years specified.

[2] Not called for on the questionnaire.

Table 17.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Industries.

Industries[1] (Arranged Alphabetically)	Number of Establishments	Value of Stock and Materials Used[2]	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
All Industries	*8,570*	*$1,007,806,958*	*$453,940,826*	*425,157*	*$2,054,865,331*
Aluminum products	4	51,627	21,014	23	101,023
Artificial leather	8	2,515,375	563,595	433	4,523,901
Awnings, tents, sails, and canvas covers	63	487,354	288,687	269	1,226,894
Bags, paper	5	1,976,551	369,177	340	2,798,022
Baskets and rattan and willow ware	3	61,590	48,761	65	160,380
Belting and packing, leather	23	1,636,396	398,977	362	3,222,687
Beverages, non-alcoholic	147	3,745,978	1,116,501	1,031	10,181,479
Blacking, stains, and dressings	64	2,071,226	519,581	402	4,661,968
Bolts, nuts, washers, and rivets	10	453,888	518,594	479	1,689,094
Bookbinding and blank-book making	81	2,825,119	3,293,633	2,867	9,118,264
Boot and shoe cut stock and findings	274	31,399,674	6,745,849	7,279	47,350,318
Boots and shoes, other than rubber	266	69,489,901	36,510,593	44,658	132,964,607
Boots and shoes, rubber	4	5,399,541	4,990,006	4,692	16,658,838
Boxes, paper	114	13,798,302	4,919,652	4,904	24,735,850
Boxes, wooden, except cigar boxes	50	1,861,937	1,091,525	1,219	3,890,841
Bread and other bakery products	1,074	36,340,018	16,032,980	12,774	79,255,214
Brooms	8	143,506	85,089	106	281,082
Brushes, other than rubber	19	2,220,186	724,371	706	4,942,513
Butter	5	216,157	22,616	17	290,817
Buttons	11	367,304	307,815	409	908,127
Canned and cured fish	14	2,932,250	856,375	860	4,994,476
Canned and dried fruits and vegetables	31	4,950,002	725,071	645	7,474,914
Card cutting and designing	6	518,252	226,353	179	1,243,628
Carpets and rugs, rag	4	58,364	25,808	45	111,816
Carpets and rugs, wool, other than rag	6	1,757,075	1,227,608	1,234	4,279,901
Carriages and sleds, children's	11	2,023,430	1,149,755	1,169	4,250,477
Caskets, coffins, burial cases, etc.	21	$1,094,589	$448,730	387	$2,291,261
Cheese	8	688,337	77,957	46	918,178
Chemicals	20	7,435,203	2,890,618	2,232	15,752,881
Cigars	27	727,525	274,177	306	1,393,858
Clay products, other than pottery	13	182,588	292,843	282	771,136
Cleaning and polishing preparations	37	441,783	101,666	95	965,875
Clothing, men's (except work)	180	13,975,860	6,790,108	7,380	28,103,987
Clothing, women's	308	23,163,097	9,704,121	12,075	43,987,205
Clothing, work (including work shirts) men's	30	2,673,938	1,079,135	1,301	5,165,065
Compressed and liquefied gases	9	330,734	171,910	117	1,902,987
Concrete products	50	892,354	608,006	468	2,349,426
Condensed and evaporated milk	5	895,531	47,780	41	1,150,119
Confectionery	113	14,850,131	4,870,092	5,835	27,542,363
Cooperage	14	768,829	345,888	369	1,377,824
Cordage and twine	14	4,400,881	1,530,523	1,487	8,327,744
Corsets and allied garments	9	826,787	407,092	519	1,755,567
Cotton goods	95	30,648,737	23,578,913	30,422	66,988,947
Cotton small wares	43	4,294,267	2,282,365	2,636	9,123,485
Cutlery (not including silver and plated cutlery) and edge tools	44	2,006,451	2,470,155	2,150	9,809,723
Dentist's equipment and supplies	5	126,610	101,269	152	417,856
Doors and shutters, metal	5	129,841	112,758	83	338,581
Druggists' preparations, including patent medicines and compounds	63	4,990,754	1,004,131	935	14,784,605
Dyeing and finishing textiles	61	23,683,661	12,089,215	10,925	47,900,883
Electrical machinery, apparatus, and supplies	75	30,601,945	20,766,353	15,783	92,260,000

[1] Industries for which data can be presented separately without disclosing the operations of individual establishments.

[2] Value of "stock and materials used" does not include amounts paid for work done on contract on materials supplied by the reporting establishments.

Table 17.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Industries.—Continued

Industries (Arranged Alphabetically)	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Electroplating	43	278,489	482,883	446	1,183,282
Elevators and elevator equipment	7	387,974	218,170	161	870,121
Embroideries, trimmings, and stamped art goods	30	1,090,027	481,586	630	1,977,394
Engines, turbines, water wheels, etc.	4	$88,722	$83,001	73	$263,026
Engraving (other than steel, copperplate, or wood), chasing, etc.	27	138,714	272,180	211	656,254
Engraving, steel, copperplate, and wood and plate printing	22	424,278	433,762	456	1,451,719
Envelopes	15	4,310,437	1,752,461	1,623	8,515,662
Feeds, prepared, for animals and fowls	16	6,265,026	410,614	330	8,379,471
Felt goods, wool, hair or jute	11	2,077,645	758,861	661	3,852,001
Fertilizers	10	2,638,318	244,612	207	3,975,672
Flavoring extracts and flavoring sirups	24	1,118,990	180,778	161	2,167,981
Flour and other grain-mill products	6	800,733	32,616	28	876,989
Food preparations	62	6,389,038	622,798	637	9,602,107
Forgings, iron and steel	13	1,699,616	1,091,039	826	3,975,228
Foundry and machine-shop products	372	19,687,217	19,716,667	14,636	63,703,683
Fur goods	18	237,346	142,924	127	575,583
Furnishing goods, men's	29	2,626,154	914,781	1,255	4,493,979
Furniture, including store and office fixtures	218	10,369,240	6,973,636	6,893	24,182,496
Galvanizing and other coating	8	93,951	90,822	77	289,979
Glue and gelatin	11	5,742,958	1,335,957	920	9,143,807
Grease and tallow	14	2,602,221	549,031	377	4,053,818
Hand stamps and stencils and brands	23	153,197	169,988	153	526,490
Hardware	28	1,387,260	871,074	883	4,030,692
Hats and caps, except felt and straw, men's	18	171,227	77,836	82	392,754
Hats, fur-felt	6	1,457,521	494,416	607	2,262,468
Heating and cooking apparatus, except electric [1]	59	5,498,908	4,393,206	3,514	17,036,966
House-furnishing goods	84	8,256,367	1,441,093	2,363	12,138,754
Ice cream	112	6,409,573	1,128,771	894	13,489,975
Ice, manufactured	55	790,439	535,647	360	3,200,658
Instruments, professional and scientific	23	$1,329,161	$963,250	780	$4,664,167
Jewelers' findings and materials	15	5,321,747	909,737	684	7,324,735
Jewelry	78	4,868,005	4,111,467	3,853	13,801,823
Jewelry and instrument cases	8	445,705	367,268	430	1,279,134
Knit goods	82	14,062,892	6,098,756	7,208	26,979,790
Lapidary work	4	31,866	24,065	22	97,299
Lasts and related products	17	603,499	825,726	565	2,161,774
Leather goods, n.e.c.	38	947,816	562,183	688	2,090,937
Leather: Tanned, curried, and finished	96	29,836,706	10,714,316	8,632	48,668,597
Lighting equipment	15	585,914	340,691	318	1,456,070
Lime	7	544,680	349,049	280	1,248,031
Liquors, malt	14	3,352,319	1,703,546	1,108	11,655,593
Lithographing	12	1,806,389	1,246,206	887	4,739,058
Lumber and timber products	28	741,064	361,903	360	1,629,616
Macaroni, spaghetti, vermicelli, etc.	11	596,676	156,950	163	1,005,195
Machine-tool accessories and precision tools	44	1,901,077	3,825,340	3,375	11,672,748
Machine tools	26	4,553,307	4,194,222	2,846	15,924,855
Marble, granite, slate, and other stone products	108	1,093,473	1,434,711	997	3,683,516
Mattresses and bed springs	70	2,938,096	879,213	941	5,518,214
Meat packing, wholesale	23	35,575,466	3,602,305	2,377	43,913,634
Millinery	31	1,611,454	898,713	1,109	3,465,409
Minerals and earths, ground	7	606,819	311,486	320	1,436,500
Mirror and picture frames	17	148,217	106,760	112	409,859

[1] Classified prior to 1937 as Stoves and ranges (other than electric) and warm-air furnaces and Steam and hot-water heating apparatus and steam fittings.

Table 17.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Industries.—Continued

Industries[1] (Arranged in Alphabetically)	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Mirrors and other glass products	16	278,988	266,043	207	827,883
Miscellaneous articles	42	1,290,011	923,110	1,093	3,293,940
Models and patterns, not including paper patterns	51	164,958	631,431	401	1,407,423
Motor-vehicle bodies and motor-vehicle parts	26	778,655	476,056	397	1,774,846
Musical instruments and parts, except piano and organ	7	134,263	211,083	186	589,055
Nails, spikes, etc. not made in wire mills	16	1,941,855	912,942	870	4,087,626
Nonferrous-metal alloys and products, except aluminum	69	3,805,278	1,496,960	1,246	7,508,726
Paints, pigments and varnishes	47	$5,717,183	$939,134	767	$11,291,495
Paper and wood pulp	67	28,778,253	11,567,938	9,974	55,447,418
Paper goods	78	15,486,490	5,852,375	5,442	30,681,200
Paving materials	16	1,707,660	356,023	218	2,779,453
Perfumes, cosmetics, and other toilet preparations	13	194,309	62,633	71	659,501
Photo-engraving	43	211,604	933,551	484	2,046,929
Planing-mill products	105	3,091,012	1,529,283	1,236	6,282,311
Plumbers' supplies	17	1,863,994	699,923	608	3,721,531
Pocketbooks, purses, and card cases	22	3,325,032	1,396,213	1,880	6,447,895
Printing and publishing	749	22,372,140	22,521,737	14,161	83,046,915
Pumps (hand and power) and pumping equipment	14	4,419,215	2,027,179	1,517	9,336,939
Radio apparatus and phonographs	9	3,947,733	2,542,449	2,748	9,800,879
Refrigerators and ice-making apparatus	10	111,914	56,030	47	242,219
Rubber goods, including rubber tires and inner tubes	65	25,776,787	8,114,070	7,213	48,351,026
Saddlery, harness, and whips	4	60,160	28,811	33	120,716
Sausage and sausage casings	68	6,663,109	835,753	734	9,027,114
Screw-machine products and wood screws	28	1,199,554	1,517,229	1,089	3,975,698
Sheet-metal work	82	1,981,765	1,080,839	798	4,569,513
Ship and boat building, steel and wooden	36	12,263,008	9,641,506	5,641	23,304,235
Shirts and nightwear, men's	12	3,634,443	1,938,445	2,858	6,842,039
Signs and advertising novelties	53	693,398	661,987	569	2,207,606
Silk and rayon goods	31	16,690,515	7,438,069	8,797	28,560,605
Silverware and plated ware	28	2,217,306	1,628,014	1,463	6,667,340
Smelting and refining, nonferrous metals, not from the ore	5	762,921	53,524	46	1,038,773
Sporting and athletic goods	17	3,461,616	2,068,040	1,685	7,709,392
Stamped and pressed metal products, enameling, etc.	52	3,662,318	2,492,077	2,104	9,275,492
Statuary and art goods	6	37,122	51,170	43	153,836
Steam and other packing	7	418,524	133,843	107	837,299
Stereotyping and electrotyping	14	122,015	439,391	242	1,051,314
Structural and ornamental metal work	57	3,239,398	965,964	653	5,663,334
Surgical and orthopedic appliances	29	1,340,257	373,406	433	2,625,001
Suspenders, garters, and other elastic woven goods	7	773,130	236,828	346	1,315,773
Synthetic-resin, cellulose-plastic, etc.	12	2,035,761	1,400,455	1,162	4,253,661
Tanning materials and natural dyestuffs	25	1,869,945	305,192	202	2,949,504
Textiles machinery and parts	96	7,216,058	9,231,460	7,947	25,044,235
Tin cans and other tinware	9	2,090,254	459,930	409	3,360,284
Tools, not including edge tools, machine tools, files, or saws	42	2,187,542	1,614,352	1,401	5,710,008
Toys, games, and playground equipment	17	2,597,248	1,330,637	1,602	5,831,314
Trunks, suitcases, and bags	18	542,974	234,143	267	1,073,364
Umbrellas, parasols, and canes	5	271,019	80,434	122	477,215
Vinegar and cider	9	395,872	65,953	78	532,520
Window and door screens and weather strip	15	179,596	77,911	67	345,550
Window shades and fixtures	29	630,164	126,733	125	1,136,289

Table 17.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Industries.—Concluded

Industries[1] (Arranged in Alphabetically)	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Wire drawn from purchased rods	13	6,408,393	4,302,965	3,160	14,963,191
Wirework	26	1,662,091	1,018,086	958	4,165,403
Wood turned and shaped and other wooden goods	41	1,026,120	731,644	820	2,366,482
Wool scouring	12	648,621	734,036	641	2,322,288
Wool shoddy	50	3,858,749	1,012,342	1,132	6,155,171
Woolen and worsted goods	115	78,356,063	35,255,107	36,780	136,446,963
All other industries [1]	345	145,387,225	36,143,523	29,038	254,369,349

[1] Includes, largely, data for industries represented by less than three establishments as well as the industries, Soap; Petroleum refining; Optical goods; Abrasive wheels, and Clocks and watches, data for which cannot be given separately without disclosing the operations of individual establishments. Important industries in the State represented by less than three establishments are: Sugar refining, and Motor vehicles, not including motorcycles.

Cities and Towns. Principal data relative to manufactures in 1938 in each of the 39 cities and 312 towns of the commonwealth, with totals for the state, are presented in Table 18.

The total number of manufacturing establishments in the 39 cities in Massachusetts, considered as a group, was 6,857, and the total number of manufacturing establishments in the 312 towns was 1,713. The total value of all products manufactured in the 39 cities amounted to $1,590,953,390, or 77.4 per cent of the aggregate value ($2,054,865,331) of all products manufactured in the commonwealth in that year; the value of stock and materials used in manufacture was $780,905,449, and the difference between these amounts ($810,047,941) represents the value added by the various manufacturing processes. The total value of all products manufactured in the 312 towns was $463,911,941, or 22.6 per cent of the aggregate value of products; the value of stock and materials used in manufacture was $226,901,509, and the difference between these amounts ($237,010,432) represents the value added by the various manufacturing processes.

The average number of wage-earners employed in the 6,857 establishments in the 39 cities during the year was 317,315, or 74.6 per cent of the average number of wage-earners (425,157) employed in all manufacturing establishments in the state, and the total amount paid in wages was $342,112,352. The average number of wage-earners employed in the 1,713 establishments in the 312 towns was 107,842, or 25.4 per cent of the average number of wage-earners employed in all manufacturing establishments in the state, and the total amount paid in wages was $111,828,474.

As a manufacturing center, Boston ranked first among the cities of the commonwealth, and the value of products manufactured in that city in 1938 was $367,366,715, constituting 17.9 per cent of the aggregate value of all products manufactured in the entire state during the year.

In order of importance, based on the value of products manufactured in 1938, the ten leading manufacturing cities were: Boston, Worcester, Cambridge, Lawrence, Lynn, Springfield, Somerville, Fall River, Lowell, and New Bedford. The ten leading towns were: Watertown, Norwood, Southbridge, Framingham, Braintree, Walpole, West Springfield, Andover, Plymouth, and Webster.

Table 18.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Cities and Towns.

Cities [1] and Towns	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
The State	*8,570*	*$1,007,806,958*	*$453,940,826*	*425,157*	*$2,054,865,331*
39 Cities	*6,857*	*780,905,449*	*342,112,352*	*317,315*	*1,590,953,390*
312 Towns	*1,713*	*226,901,509*	*111,828,474*	*107,842*	*463,911,941*
Abington	14	1,228,292	546,986	610	2,345,887
Acton	7	436,252	167,449	171	790,502
Adams	19	2,739,169	1,928,418	2,199	6,567,586
Agawam	4	247,281	167,240	163	530,539
Amesbury	25	3,934,998	2,283,798	2,193	8,022,028
Amherst	6	144,724	50,563	57	264,261
Andover	15	6,545,708	2,805,512	2,747	11,466,689
Arlington	23	324,252	183,191	128	672,169
Ashburnham	8	309,788	295,388	342	861,579
Athol	30	2,604,154	2,117,865	2,315	7,938,247
ATTLEBORO	116	15,093,414	6,247,927	5,687	28,914,174
Auburn	8	756,848	359,292	335	1,610,766
Ayer	7	41,015	54,991	47	139,120
Barnstable	7	82,624	59,691	51	239,108
Belmont	7	36,190	33,711	34	112,712
BEVERLY	37	2,192,923	4,080,611	3,089	8,871,037
Billerica	6	1,630,071	456,605	462	2,483,977
Blackstone	5	34,775	17,984	18	76,701
BOSTON	2,255	185,362,524	64,603,088	54,160	367,366,715
Braintree	17	11,794,674	1,091,445	938	14,883,722
Bridgewater	8	1,972,823	592,760	544	3,581,263
BROCKTON	207	16,988,703	7,663,150	7,957	32,494,674
Brookline	24	416,134	436,239	476	1,376,443
CAMBRIDGE	354	47,271,209	17,678,900	15,911	114,103,543
Canton	20	4,604,141	1,507,182	1,431	8,087,820
Chelmsford	8	294,763	621,527	636	1,707,863
CHELSEA	105	9,940,146	4,520,030	4,389	19,607,733
Chester	3	72,459	100,383	96	300,466
CHICOPEE	54	21,189,004	7,880,475	6,342	42,579,152
Clinton	25	3,235,267	1,926,544	1,929	6,752,981
Concord	12	191,589	178,001	183	539,979
Danvers	20	1,547,641	920,052	952	3,332,701
Dedham	8	269,241	151,744	117	674,910
Deerfield	4	447,595	45,626	41	623,269
Dudley	10	11,733,691	731,387	664	3,040,242
Easthampton	18	2,842,277	2,062,901	2,207	7,583,655
Easton	8	852,511	310,958	342	1,871,254
EVERETT	107	27,670,350	5,201,209	4,348	43,049,058
FALL RIVER	252	31,155,826	16,640,787	22,055	58,952,034
FITCHBURG	92	16,309,574	6,800,758	6,647	30,537,162
Framingham	38	6,871,554	3,841,963	3,375	16,146,617
Franklin	14	1,712,574	840,722	782	3,292,691
Freetown	4	233,282	135,895	156	469,073
GARDNER	65	7,829,015	5,113,532	4,879	19,276,949
GLOUCESTER	47	4,879,296	1,806,937	1,697	8,835,288
Grafton	7	1,235,646	985,070	1,080	2,660,408
Great Barrington	10	731,862	455,403	464	2,377,555
Greenfield	33	1,500,811	1,574,450	1,386	5,339,339
HAVERHILL	181	12,768,431	5,886,934	7,063	23,996,383
Holbrook	6	1,223,168	388,555	321	2,076,024
HOLYOKE	144	18,601,643	8,797,227	8,481	38,017,455
Hudson	20	1,975,653	1,226,251	1,340	4,318,258
Ipswich	10	540,791	413,585	539	1,205,712
LAWRENCE	156	37,502,651	18,288,804	19,614	71,013,268
Leicester	13	977,555	732,111	872	2,226,755
LEOMINSTER	62	6,069,093	3,809,209	4,261	13,806,451
LOWELL	201	27,172,859	11,336,294	13,066	52,653,751
LYNN	278	23,417,189	15,994,524	13,103	66,237,754
MALDEN	109	12,713,822	3,493,924	3,560	22,325,368
Mansfield	15	1,597,808	585,374	540	3,069,962
Marblehead	11	185,442	133,096	177	441,934
MARLBOROUGH	32	3,478,594	1,970,560	2,258	6,767,661
MEDFORD	50	3,674,986	1,187,548	997	6,643,653
Medway	6	377,819	288,959	285	905,017
MELROSE	23	1,331,133	381,741	399	2,314,251
Merrimac	3	97,320	98,277	111	333,244
Methuen	25	3,481,663	1,151,774	1,612	5,383,063
Middleborough	23	3,511,642	1,170,537	1,348	6,169,226
Milford	28	2,825,554	1,379,784	1,615	5,077,797
Millbury	22	2,380,033	1,236,886	1,140	4,992,921
Milton	6	188,364	87,083	69	451,909
Montague	14	977,879	761,297	776	2,402,072
Nantucket	4	24,042	26,985	17	91,396
Natick	23	2,089,217	902,948	733	3,830,215
Needham	28	1,426,676	462,605	507	3,085,414

[1] Names of cities are printed in capital letters.

Table 18.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Cities and Towns.—Continued

Cities and Towns	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
NEW BEDFORD	196	24,156,145	15,335,138	18,416	52,086,533
NEWBURYPORT	25	2,662,323	1,690,754	1,714	6,476,702
NEWTON	57	4,216,881	2,299,173	2,383	10,119,611
NORTH ADAMS	41	9,455,286	5,058,529	4,997	18,310,909
North Andover	10	1,885,139	1,074,165	1,129	3,531,270
North Attleborough	60	2,956,735	1,926,287	2,002	6,894,644
NORTHAMPTON	41	2,679,582	1,762,291	1,636	6,738,353
Norton	8	352,364	419,842	445	1,134,424
Norwood	25	8,798,410	3,734,866	2,703	17,902,900
Orange	19	1,191,645	690,131	837	3,283,965
Oxford	11	506,199	328,022	374	1,031,361
Palmer	19	1,627,930	932,276	966	3,961,355
PEABODY	77	14,415,133	6,119,050	5,169	24,754,431
PITTSFIELD	63	15,845,440	8,041,562	6,344	38,608,557
Plainville	6	359,914	264,832	285	959,051
Plymouth	21	5,749,043	1,645,659	1,447	9,289,543
QUINCY	131	14,830,718	10,584,789	6,496	30,447,442
Raynham	5	94,260	37,606	46	163,154
Reading	14	734,924	432,410	337	1,717,174
REVERE	14	440,666	179,489	227	955,658
Rockland	12	1,660,012	700,552	749	3,162,850
SALEM	96	9,355,689	5,028,940	5,122	21,897,393
Saugus	15	736,334	217,732	175	1,337,292
SOMERVILLE	131	46,631,863	7,162,052	4,996	63,590,815
South Hadley	8	788,873	312,500	293	1,529,805
Southbridge	30	6,183,414	5,455,112	4,946	16,982,491
SPRINGFIELD	288	26,704,309	17,243,407	14,025	66,200,246
Stoneham	16	993,813	441,007	562	2,116,482
Stoughton	27	3,907,566	1,718,682	1,687	7,621,467
Swampscott	9	193,156	144,313	93	533,483
TAUNTON	82	6,745,884	3,801,501	3,885	15,022,929
Templeton	10	732,124	393,423	401	1,387,966
Wakefield	36	1,514,928	869,361	1,007	3,350,511
Walpole	11	7,890,819	1,777,829	1,384	12,420,982
WALTHAM	91	5,747,194	3,998,562	3,899	14,486,992
Ware	15	2,655,815	886,061	1,082	4,875,875
Warren	8	1,627,361	486,515	554	2,636,269
Watertown	49	8,831,712	5,189,129	4,468	21,207,987
Webster	19	4,380,599	2,558,724	2,794	8,487,527
Wellesley	10	318,186	264,463	173	718,443
West Springfield	24	5,908,224	2,542,218	1,959	11,945,077
Westborough	12	488,620	325,910	308	1,297,624
WESTFIELD	40	3,543,224	1,632,079	1,440	7,590,199
Westminster	4	48,178	28,333	29	124,925
Weymouth	24	2,862,366	953,570	829	5,190,581
Whitman	19	3,257,833	1,475,838	1,424	6,415,584
Winchendon	15	866,276	747,342	820	2,232,582
Winthrop	9	73,443	40,621	44	159,438
WOBURN	39	5,181,520	1,658,841	1,264	9,320,540
WORCESTER	518	55,681,207	31,132,026	25,339	125,982,566
All other towns [1]	394	59,187,992	31,728,100	29,817	123,482,818

[1] For 137 towns, data cannot be presented without disclosing the operations of individual establishments. In 89 towns there were no manufacturing establishments coming within the scope of the canvass; i.e., having a product value of $5,000.00 or more. It is to be further noted that during 1938 the towns of Dana, Enfield, Greenwich and Prescott lost their identity as corporate municipalities.

Metropolitan Boston. As defined for purposes of the annual census of manufactures in Massachusetts, Metropolitan Boston comprised 14 cities and 29 towns included within a radius of about 15 miles from the state house in Boston. Within this area were located, in 1938, 4,150 manufacturing establishments, in which products valued at $880,633,559 were manufactured. The average number of wage-earners employed in these establishments during the year was 134, 317, and the total amount paid in wages was $160,123,677. The number of manufacturing establishments in Metropolitan Boston in 1938 constituted 48.4 per cent of the total number (8,570) in the entire state; the value of products manufactured constituted 42.9 per cent of the total value of all products manufactured in the state, and the average number of wage-earners was 31.6 per cent of the total number employed in all manufacturing establishments in the state. Principal data relative to manufactures in Metropolitan Boston for the years 1928 to 1938, inclusive, are presented in Table 19; and data for 1938 for each of the 14 cities and 29 towns are presented in Table 20.

Table 19.—Principal Data Relative to Manufactures in Metropolitan Boston[1]: By Years, 1928-1938, Inclusive.

Years	Number of Establishments	Capital Invested	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
			All Industries			
1928	4,713	$897,124,478	$648,665,366	$235,017,427	174,522	$1,278,895,983
1929	4,831	[2]	688,277,589	248,419,990	182,780	1,409,136,706
1930	4,652	866,181,625	590,738,808	215,334,364	162,699	1,181,391,542
1931	4,536	[2]	452,641,062	171,567,144	140,074	955,211,023
1932	4,225	674,095,448	337,019,811	124,855,342	114,986	704,875,376
1933	3,962	[2]	324,572,258	116,591,358	116,145	680,941,992
1934	3,938	644,482,368	396,344,058	135,570,392	125,876	782,264,772
1935	4,136	[2]	451,662,025	149,104,478	133,219	866,384,381
1936	4,160	634,317,236	499,124,233	170,838,185	146,133	979,387,766
1937	4,240	[2]	539,835,837	182,531,644	149,560	1,038,966,525
1938	4,150	609,296,874	447,879,719	160,123,677	134,317	880,633,559

[1] For a list of cities and towns in Metropolitan Boston, see Table 20. In 1929 and thereafter, the towns of Norwood, Stoughton, and Walpole were included in the district.
[2] Not called for on the questionnaire.

Table 20.—Principal Data Relative to Manufactures in Metropolitan Boston in 1938: By Cities and Towns.

Municipalities [1]	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Metropolitan Boston	*4,150*	*$447,879,719*	*$160,123,677*	*134,317*	*$880,633,559*
Arlington	23	324,252	183,191	128	672,169
Belmont	7	36,190	33,711	34	112,712
BOSTON	2,255	185,362,524	64,603,088	54,160	367,366,715
Braintree	17	11,794,674	1,091,445	938	14,883,722
Brookline	24	416,134	436,239	476	1,376,443
CAMBRIDGE	354	47,271,209	17,678,900	15,911	114,103,543
Canton	20	4,604,141	1,507,182	1,431	8,087,820
CHELSEA	105	9,940,146	4,520,030	4,389	19,607,733
Dedham	8	269,241	151,744	117	674,910
EVERETT	107	27,670,350	5,201,209	4,348	43,049,058
LYNN	278	23,417,189	15,994,524	13,103	66,237,754
MALDEN	109	12,713,822	3,493,924	3,560	22,325,368
MEDFORD	50	3,674,986	1,187,548	997	6,643,653
MELROSE	23	1,331,133	381,741	399	2,314,251
Milton	6	188,364	87,083	69	451,909
Needham	28	1,426,676	462,605	507	3,085,414
NEWTON	57	4,216,881	2,299,173	2,383	10,119,611
Norwood	25	8,798,410	3,734,866	2,703	17,902,900
QUINCY	131	14,830,718	10,584,789	6,496	30,447,442
Reading	14	734,924	432,410	337	1,717,174
REVERE	14	440,666	179,489	227	955,658
Saugus	15	736,334	217,732	175	1,337,292
SOMERVILLE	131	46,631,863	7,162,052	4,996	63,590,815
Stoneham	16	993,813	441,007	562	2,116,482
Stoughton	27	3,907,566	1,718,682	1,687	7,621,467
Swampscott	9	193,156	144,313	93	533,483
Wakefield	36	1,514,928	869,361	1,007	3,350,511
Walpole	11	7,890,819	1,777,829	1,384	12,420,982
WALTHAM	91	5,747,194	3,998,562	3,899	14,486,992
Watertown	49	8,831,712	5,189,129	4,468	21,207,987
Wellesley	10	318,186	264,463	173	718,443
Weymouth	24	2,862,366	953,570	829	5,190,581
Winthrop	9	73,443	40,621	44	159,438
WOBURN	39	5,181,520	1,658,841	1,264	9,320,540
9 Other towns [2]	28	3,534,189	1,442,624	1,023	6,442,587

[1] Names of cities are printed in capital letters.
[2] Includes two towns (Cohasset and Nahant) in which there were no manufacturing establishments, and seven towns (Dover, Hingham, Hull, Lexington, Weston, Westwood and Winchester) for which data cannot be shown separately without disclosing the operations of individual establishments.

Counties. Principal data having reference to manufactures in each of the counties of the state in 1938 are presented in Table 21. Based on the value of products, Middlesex County led with $431,059,806, or 21.0 per cent of the total ($2,054,865,331) for the state. Next in the order named, on the basis

of product values, were Suffolk, Worcester, Essex, Hampden, and Bristol Counties,—while on the basis of wage-earners, the important counties succeeded each other, as follows: Worcester, Middlesex, Essex, Suffolk, Bristol, and Hampden. The average number of wage-earners in these counties in 1938 ranged from 35,201 in Hampden County to 74,394 in Worcester County.

Table 21.—Principal Data Relative to Manufactures in Massachusetts in 1938: By Counties

Counties	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
The State	*8,570*	*$1,007,806,958*	*$453,940,826*	*425,157*	*$2,054,865,331*
Barnstable	25	335,860	140,507	139	661,573
Berkshire	163	32,175,261	17,632,105	15,962	73,872,247
Bristol	776	86,664,007	48,025,626	55,739	176,741,049
Dukes	[1]	[1]	[1]	[1]	[1]
Essex	1,063	127,622,510	68,551,508	66,673	270,383,737
Franklin	89	8,348,600	4,431,149	4,322	18,687,963
Hampden	593	81,066,519	41,162,827	35,201	178,916,506
Hampshire	102	9,256,732	5,340,464	5,554	21,519,695
Middlesex	1,542	225,488,953	77,376,169	72,625	431,059,806
Nantucket and Dukes [1]	9	36,151	40,814	29	168,552
Norfolk	396	65,666,028	26,561,279	20,446	120,547,728
Plymouth	350	36,547,931	14,846,263	15,253	68,460,420
Suffolk	2,383	195,816,779	69,343,228	58,820	388,089,544
Worcester	1,079	138,781,627	80,488,887	74,394	305,756,511

[1] Five establishments located in Dukes County are included with the four of Nantucket County in order to avoid disclosing the operations of individual concerns.

Principal Industries. A summary of the data relative to the 23 principal manufacturing industries in Massachusetts for the years 1928-1938, inclusive, arranged in the order of value of products in 1938, is presented in Table 22. The total value of products of the 23 principal industries specified was $1,262,182,839, and constituted 61.4 per cent of the aggregate value of all products ($2,054,865,331) manufactured in Massachusetts during that year.

Table 22.—Summary of Data Relative to Manufactures in Massachusetts: By Principal Industries, 1928-1938[1].

Years	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
ALL INDUSTRIES					
1928	9,971	$1,663,155,564	$670,063,291	540,927	$3,224,227,651
1929	9,872	1,681,432,788	694,805,312	557,494	3,392,162,237
1930	9,586	1,333,317,227	573,838,044	481,449	2,676,387,256
1931	9,305	1,015,093,739	474,189,202	434,441	2,157,450,449
1932	8,778	718,347,675	334,358,550	350,521	1,521,752,939
1933	8,145	800,611,332[2]	354,523,634	398,592	1,668,733,387
1934	8,336	924,075,172[2]	408,617,489	423,933	1,855,598,291
1935	8,517	1,078,869,946	448,326,676	445,519	2,103,691,437
1936	8,685	1,230,882,709	514,599,251	481,432	2,437,520,795
1937	8,718	1,338,771,937	559,246,370	498,602	2,623,115,728
1938	8,570	1,007,806,958	453,940,826	425,157	2,054,865,331
Woolen and Worsted Goods					
1928	171	$145,440,485	$51,882,279	45,248	$234,206,586
1929	156	146,020,898	52,304,583	45,673	242,898,460
1930	145	92,027,443	39,245,500	35,104	156,943,782
1931	128	86,659,519	37,436,905	37,221	147,701,378
1932	116	49,305,061	22,708,245	28,593	87,814,050
1933	111	81,395,142	33,072,129	39,808	148,798,542
1934	114	73,518,559	30,646,684	35,991	125,701,633
1935	115	117,877,123	46,251,412	49,416	193,886,320
1936	117	133,488,519	46,212,535	48,421	209,825,208
1937	119	147,336,458	49,804,314	47,994	232,513,060
1938	115	78,356,063	35,255,107	36,780	136,446,963

[1] In making comparisons for the several years of the money values presented in this summary, due allowance should be made for price fluctuations from year to year. The *values* of products manufactured do not necessarily represent the relative *volume* of goods produced in the several years.

[2] Includes the processing tax.

Table 22. — Summary of Data Relative to Manufactures in Massachusetts: By Principal Industries, 1928-1938—Continued.

Years	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Boots and Shoes, other than Rubber					
1928	453	$126,778,246	$63,871,277	55,478	$238,884,158
1929	436	124,024,880	64,205,152	55,093	241,587,864
1930	420	95,336,095	50,896,764	49,105	185,072,323
1931	397	79,519,951	45,679,225	47,664	160,666,398
1932	392	60,709,609	36,843,238	43,265	126,222,124
1933	389	65,591,230	36,559,127	46,739	128,073,952
1934	347	68,463,192	39,444,814	45,951	133,985,336
1935	289	68,353,293	38,566,486	44,371	132,686,781
1936	287	74,767,397	39,971,383	46,294	142,308,412
1937	291	81,138,368	41,114,626	46,604	150,999,351
1938	266	69,489,901	36,510,593	44,658	132,964,607
Electrical Machinery, Apparatus and Supplies					
1928 [1]	120	$56,874,825	$33,972,583	24,788	$156,081,762
1929 [1]	106	64,323,352	41,011,734	28,844	184,786,944
1930 [1]	111	45,095,735	31,948,815	24,217	120,334,662
1931	86	27,500,538	20,165,117	17,101	93,097,720
1932	82	15,508,692	10,462,933	11,326	46,830,685
1933	73	17,776,670	11,666,831	12,416	47,958,987
1934	74	20,282,306	14,711,412	13,474	58,978,073
1935	74	27,213,887	18,174,449	15,507	81,495,781
1936	73	41,751,019	26,277,433	19,575	116,664,331
1937	74	51,873,522	37,601,286	24,642	148,798,048
1938	75	30,601,945	20,766,353	15,783	92,260,000
Printing and Publishing					
1928	821	$34,795,664	$26,594,305	14,634	$112,243,252
1929	1,000 [2]	35,245,669	28,115,167	15,198	140,481,332
1930	799	32,050,850	27,077,682	15,051	111,526,855
1931	963 [2]	26,416,073	23,456,179	13,224	111,395,181
1932	767	20,617,212	19,667,336	12,022	77,732,521
1933	829 [2]	17,238,002	16,336,090	11,359	81,164,261
1934	723	19,963,785	18,835,230	12,406	78,773,082
1935	876 [2]	20,901,080	19,857,322	12,910	95,446,928
1936	759	22,362,793	22,620,331	13,957	89,147,437
1937	872 [2]	24,312,620	23,459,897	14,752	106,604,044
1938	749	22,372,140	22,521,737	14,161	83,046,915
Bread and other Bakery Products					
1928	1,108	$38,297,898	$11,351,600	8,770	$76,006,262
1929	1,077	39,664,130	13,700,195	10,413	80,270,302
1930	1,132	36,656,100	13,036,847	10,041	78,462,469
1931	1,119	29,587,755	12,753,731	10,079	67,805,420
1932	1,111	25,236,168	10,643,686	9,315	59,488,548
1933	1,021	25,972,865	11,907,157	10,797	55,568,784
1934	1,075	32,983,792	12,889,102	11,393	67,094,325
1935	1,083	40,359,800	14,369,048	12,874	72,881,586
1936	1,087	38,942,666	13,678,986	12,361	76,819,878
1937	1,078	40,786,708	16,320,671	13,083	79,458,398
1938	1,074	36,340,018	16,032,980	12,774	79,255,214
Clothing, Men's and Women's, including Work Clothing					
1928	500	$37,087,769	$14,354,468	13,310	$69,021,128
1929	500	41,841,471	15,087,955	13,174	78,174,045
1930	489	35,613,636	14,398,266	13,540	65,951,764
1931	487	31,017,083	13,216,215	14,052	59,920,324
1932	474	23,706,198	9,564,654	11,874	44,324,186
1933	412	25,706,754	9,503,081	12,611	47,726,650
1934	442	29,204,071	12,065,074	13,984	53,894,126
1935	459	33,608,061	14,053,622	16,450	63,535,943
1936	483	41,271,955	16,759,092	19,356	75,850,026
1937	509	43,254,094	17,365,501	20,128	80,592,504
1938	518	39,812,895	17,573,364	20,756	77,256,257

[1] Includes data for manufacture of Radio apparatus and phonographs.

[2] The census for the years 1929, 1931, 1933, 1935, and 1937, included certain publishing establishments not canvassed in the other years specified, and data for these years, therefore, are not strictly comparable with corresponding data for the other years specified.

Table 22. — Summary of Data Relative to Manufactures in Massachusetts: By Principal Industries, 1928-1938—Continued.

Years	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Cotton Goods, excluding Cotton Small Wares					
1928	153	$120,815,771	$61,215,058	65,192	$216,997,848
1929	135	125,441,636	65,556,859	70,788	253,618,009
1930	134	79,531,622	47,363,957	53,745	151,834,379
1931	120	53,329,684	38,868,889	46,990	114,707,445
1932	105	30,030,280	22,698,692	32,464	68,040,258
1933	103	51,189,247[1]	31,110,036	45,418	98,602,761
1934	105	57,690,978[1]	36,473,572	49,297	111,247,620
1935	105	55,691,405	31,012,917	41,230	105,412,577
1936	100	50,606,609	34,428,018	42,095	106,891,365
1937	96	54,475,099	36,226,586	42,562	110,005,566
1938	95	30,648,737	23,578,913	30,422	66,988,947
Foundry and Machine-shop Products					
1928	475	$32,606,432	$30,447,463	19,803	$99,613,068
1929	465	36,893,962	32,969,609	21,243	114,965,036
1930	442	28,219,034	27,582,822	18,492	88,162,402
1931	414	17,806,400	18,841,627	14,748	60,143,267
1932	388	11,685,917	12,556,361	10,179	36,472,363
1933	335	11,043,569	12,084,953	11,022	38,524,134
1934	360	15,524,218	15,004,410	12,301	49,352,674
1935	373	18,109,987	16,913,049	13,422	56,399,807
1936	383	24,705,987	22,042,608	15,689	72,874,291
1937	378	31,285,298	26,014,518	17,611	88,706,980
1938	372	19,687,217	19,716,667	14,636	63,703,683
Paper and Wood Pulp					
1928	84	$53,105,186	$16,420,703	12,602	$93,939,888
1929	76	50,091,469	16,648,893	12,361	95,084,573
1930	76	41,204,938	14,881,473	11,603	78,339,273
1931	77	27,898,672	11,960,645	10,652	58,148,375
1932	75	19,304,723	8,901,610	9,382	39,335,415
1933	68	19,193,695	8,212,224	9,513	40,577,557
1934	73	23,021,908	9,591,727	10,071	46,635,725
1935	61	29,222,903	10,595,463	10,264	53,222,512
1936	68	32,222,665	11,715,827	10,244	60,010,622
1937	66	39,015,249	13,048,116	10,499	68,061,275
1938	67	28,778,253	11,567,938	9,974	55,447,418
Leather: Tanned, Curried and Finished					
1928	124	$53,764,692	$14,531,789	10,975	$82,268,326
1929	113	60,240,934	14,206,501	10,707	88,348,403
1930	107	41,890,582	11,645,166	8,953	63,591,977
1931	98	29,966,431	10,697,504	8,657	50,051,338
1932	101	19,253,879	8,651,070	7,932	35,608,824
1933	100	27,193,279	11,077,713	9,980	48,630,000
1934	99	30,878,912	11,505,967	10,042	50,131,406
1935	96	34,883,903	12,506,035	10,334	56,811,498
1936	96	40,689,074	13,266,632	10,672	65,794,775
1937	94	47,881,198	12,974,567	10,228	70,786,960
1938	96	29,836,706	10,714,316	8,632	48,668,597
Rubber Goods, including Rubber Tires and Inner Tubes					
1928	68	$53,136,600	$13,714,866	10,552	$89,672,751
1929	62	44,604,202	12,400,228	9,764	76,439,857
1930	65	33,032,734	10,459,597	8,658	62,870,682
1931	60	19,928,837	7,758,324	6,728	46,371,115
1932	58	14,840,426	5,778,272	6,347	33,351,480
1933	56	17,518,009	6,203,983	6,843	35,953,802
1934	52	18,903,718	6,449,584	6,921	36,265,951
1935	52	22,062,346	6,806,572	6,797	39,617,415
1936	57	24,565,670	7,800,244	7,358	44,564,014
1937	58	30,425,758	8,893,207	7,661	53,666,432
1938	65	25,776,787	8,114,070	7,213	48,351,026

[1] Includes the processing tax.

Table 22. — Summary of Data Relative to Manufactures in Massachusetts: By Principal Industries, 1928-1938—Continued.

Years	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
		Dyeing and Finishing Textiles			
1928	66	$52,048,921	$15,738,360	13,629	$83,707,199
1929	67	53,034,427	16,853,664	14,450	93,148,770
1930	65	50,849,268	14,838,020	13,081	75,853,910
1931	70	47,794,925	14,926,387	13,060	76,819,045
1932	71	34,010,823	10,377,674	11,118	54,353,966
1933	65	32,488,442	10,366,906	11,178	54,714,526
1934	73	45,512,362	12,506,124	12,942	67,293,143
1935	58[1]	17,273,926[1]	10,059,470[1]	10,423[1]	34,759,649[1]
1936	59	44,608,493	12,938,024	11,942	71,139,210
1937	59	27,231,992	13,705,564	12,250	51,555,625
1938	61	23,683,661	12,089,215	10,925	47,900,883
		Boot and Shoe Cut Stock and Findings (Not made in boot and shoe factories)			
1928	364	$63,242,637	$8,286,694	7,615	$83,979,422
1929	361	56,167,055	8,391,863	7,658	78,200,992
1930	349	42,855,725	7,259,574	6,917	59,345,418
1931	351	31,775,145	6,363,401	6,463	46,348,503
1932	334	22,829,247	5,161,390	5,817	35,280,809
1933	306	23,322,043	5,827,882	6,989	38,394,504
1934	301	24,498,170	6,482,718	7,007	39,540,231
1935	283	30,414,515	6,653,003	7,164	45,795,608
1936	285	35,688,422	7,406,141	7,697	52,008,977
1937	281	36,507,240	7,376,072	7,782	53,835,759
1938	274	31,399,674	6,745,849	7,279	47,350,318
		Meat Packing, Wholesale			
1928	37	$54,604,066	$3,855,033	2,988	$63,509,485
1929	33	56,599,409	3,572,432	2,594	64,354,688
1930	31	51,030,796	3,435,693	2,530	59,425,738
1931	31	32,764,048	2,871,319	2,123	39,704,308
1932	29	22,994,226	2,547,086	2,165	29,408,410
1933	26	22,727,714	2,555,707	2,358	30,181,196
1934	26	33,793,756[1]	3,324,627	2,615	41,283,296
1935	26	41,721,053	2,835,515	2,167	46,424,430
1936	26	41,000,326	3,285,924	2,270	47,193,004
1937	26	47,269,052	3,576,944	2,463	53,893,559
1938	23	35,575,466	3,602,305	2,377	43,913,634
		Paper Goods			
1928	60	$11,515,112	$2,665,490	2,170	$19,328,634
1929	63	17,869,831	5,219,802	4,051	29,886,125
1930	55	14,603,203	4,518,725	3,536	24,352,899
1931	59	10,960,569	3,795,246	3,218	19,232,858
1932	56	7,859,546	2,951,831	2,842	14,312,521
1933[2]	67	10,314,135	3,391,789	3,682	18,488,323
1934	72	12,506,885	4,227,752	4,277	21,411,938
1935	75	15,128,053	5,113,602	4,896	30,364,729
1936	77	17,320,015	5,933,569	5,404	33,286,066
1937	79	19,225,829	6,029,440	5,513	36,717,988
1938	78	15,486,490	5,852,375	5,442	30,681,200
		Silk and Rayon Goods			
1928	30	$16,401,463	$7,137,603	6,782	$32,022,695
1929[3]	42	20,959,668	7,105,466	7,390	37,412,704
1930	41	12,223,525	5,893,804	5,684	24,631,823
1931	38	10,468,547	5,809,739	6,939	22,920,329
1932	36	7,665,658	4,169,366	5,647	13,642,378
1933	42	11,542,895	6,514,871	9,278	23,936,958
1934	42	11,506,013	6,974,295	9,363	23,639,005
1935	34	20,826,068	9,755,225	12,124	36,105,761[4]
1936	34	25,458,001	10,239,993	12,309	42,690,224
1937	32	24,670,363	11,007,096	12,648	41,367,073
1938	31	16,690,515	7,438,069	8,797	28,560,605

[1] Not comparable with prior years due, in large measure, to changes in industry classification.

[1] Includes the processing tax.

[2] Prior to 1933, several important establishments were classified as Stationery Goods, which classification was discontinued in that year.

[3] Prior to 1929, the title of this industry was *Silk Goods*. For that year and subsequently, the manufacture of rayon has been included and the title of the industry changed to *Silk and Rayon Goods*.

[4] The increase in value of products in 1935 over 1934 is attributable, in large measure, to the inclusion of several large establishments tabulated prior to 1935 as manufacturers of cotton goods.

Table 22. — Summary of Data Relative to Manufactures in Massachusetts: By Principal Industries, 1928-1938—Continued.

Years	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Machine Tools, and Machine-tool Accessories [1]					
1929	70	$7,493,807	$9,966,187	6,600	$34,598,599
1930	69	4,424,554	6,809,094	5,105	19,709,708
1931	72	2,720,416	4,661,982	3,996	14,235,563
1932	64	1,587,002	2,420,626	2,285	7,267,979
1933	56	1,915,311	2,701,023	2,853	8,615,961
1934	60	3,746,042	4,553,171	4,125	15,701,434
1935	64	5,529,023	5,797,701	4,721	21,352,993
1936	71	6,856,746	8,112,839	6,010	27,800,031
1937	74	10,852,320	11,209,882	7,412	41,059,562
1938	70	6,454,384	8,019,562	6,221	27,597,603
Confectionery					
1928	153	$25,547,674	$6,916,799	7,489	$46,124,991
1929	144	22,820,300	6,744,576	7,471	43,932,366
1930	144	19,994,216	6,291,556	6,541	37,815,816
1931	127	14,646,330	4,983,946	5,943	30,176,229
1932	124	11,628,850	3,769,139	5,183	22,227,447
1933	108	11,333,589	3,889,281	5,429	20,959,943
1934	109	13,174,168	4,445,673	5,781	24,342,785
1935	108	15,678,998	4,594,156	6,078	27,092,367
1936	115	16,045,009	4,943,397	6,214	28,988,499
1937	106	17,403,964	5,230,466	6,392	30,679,485
1938	113	14,850,131	4,870,092	5,835	27,542,363
Knit Goods					
1928	90	$21,070,158	$9,162,848	9,092	$40,165,755
1929	86	20,401,873	8,945,286	8,817	41,050,135
1930	80	16,981,448	7,878,614	8,133	34,479,056
1931	70	14,997,853	6,765,890	7,637	29,460,966
1932	66	11,560,929	5,306,107	6,772	22,160,166
1933	70	13,398,553	5,524,729	7,680	25,549,661
1934	77	14,423,617	6,292,813	7,933	26,008,808
1935	85	15,042,736	6,636,468	8,357	26,928,702
1936	89	18,888,884	8,182,564	9,760	34,726,125
1937	82	16,926,172	7,856,750	9,256	31,821,173
1938	82	14,062,892	6,098,756	7,208	26,979,790
Textile Machinery and Parts					
1928	119	$12,350,981	$13,651,765	10,399	$39,082,682
1929	111	12,467,673	14,233,661	10,597	41,202,970
1930	109	8,423,447	10,512,566	8,602	27,033,415
1931	102	6,791,520	8,865,356	7,527	24,090,354
1932	101	4,197,545	5,153,252	5,197	13,635,758
1933	99	7,477,918	7,987,840	7,972	25,143,027
1934	104	7,851,179	9,375,405	8,788	26,658,712
1935	103	9,629,885	8,511,427	7,691	26,571,954
1936	104	10,971,073	12,573,269	9,436	35,068,321
1937	101	13,779,963	14,006,854	10,651	43,967,853
1938	96	7,216,058	9,231,460	7,947	25,044,235
Paper Boxes					
1928	114	$12,459,121	$5,249,750	5,298	$23,591,687
1929	110	13,505,759	5,422,332	5,345	25,267,448
1930	104	11,357,407	4,621,800	4,731	20,922,191
1931	101	10,131,097	4,346,894	4,499	19,241,732
1932	101	8,026,995	3,380,847	3,942	15,597,606
1933	97	10,145,478	3,490,359	4,211	18,577,574
1934	99	10,893,429	4,068,359	4,309	20,430,813
1935	104	12,861,111	4,323,210	4,634	22,753,608
1936	108	14,656,386	4,849,055	4,878	25,649,174
1937	111	16,528,658	5,056,958	5,118	28,737,290
1938	114	13,798,302	4,919,652	4,904	24,735,850

[1] Data for years prior to 1929 are not comparable due to changes in industry classifications.

Table 22.—Summary of Data Relative to Manufactures in Massachusetts: By Principal Industries, 1928-1938—Concluded.

Years	Number of Establishments	Value of Stock and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Products
Furniture, including Store and Office Fixtures					
1928	220	$16,675,734	$11,110,481	8,224	$37,464,410
1929	217	19,029,630	11,926,867	8,598	41,921,577
1930	222	13,256,836	9,585,968	7,357	32,057,862
1931	204	10,541,937	7,051,101	6,153	24,143,874
1932	193	6,902,035	4,826,916	4,866	15,923,502
1933	181	7,174,721	4,684,374	5,357	15,497,274
1934	193	7,153,903	5,158,175	5,365	16,363,596
1935	203	9,075,129	5,802,209	5,939	19,446,029
1936	213	11,325,039	7,184,114	6,825	25,058,041
1937	214	13,077,081	8,413,020	7,818	29,654,139
1938	218	10,369,240	6,973,636	6,893	24,182,496
Ship and Boat Building, Steel and Woolen					
1928	35	$4,775,415	$5,954,352	3,413	$13,439,146
1929	40	5,583,995	6,499,543	3,635	16,449,438
1930	40	9,663,618	7,558,162	4,598	19,871,065
1931	35	12,970,551	7,669,775	4,846	27,711,085
1932	32	5,685,947	6,232,299	3,779	14,302,756
1933	24	2,720,724	2,198,597	1,685	6,878,215
1934	31	10,477,711	4,595,221	3,137	16,498,326
1935	34	7,814,290	7,710.798	5,173	19,293,686
1936	36	8,127,318	8,497,926	5,842	20,981,813
1937	36	8,593,454	7,513,175	4,610	18,839,662
1938	36	12,263,008	9,641,506	5,641	23,304,235

Power Used in Manufactures: 1920-1938, Inclusive.

In Table 23 data are presented relative to power used in manufactures in each of the years 1920 to 1938, with the exception of the years 1921, 1931, 1933, 1935, and 1937, in which years the inquiry relative to power used was not included in the questionnaire.

The total amount of primary horse power used in the manufacturing industries includes (1) the rated capacity of steam engines and turbines, internal combustion engines of all kinds, and water wheels and turbines used by establishments producing such power, (2) the rated capacity of electric motors driven by purchased current used in manufacture by the establishments reporting.

It is significant to note that although there is relatively little Diesel power used, as yet, in manufacture, the use of such power has increased in recent years, sufficiently, to justify the conclusion that its adoption will become more or less general when steam and water power equipment presently in use must be replaced.

The decreases in total primary horse power produced and used in 1938 may be attributed, largely, to corresponding decreases in industrial activity for the year, except that the decrease in power produced from steam engines and turbines may, in some measure, be a continuation of the trend away from the production of power from this type of equipment which became evident about 1927.

Table 23.—Power Used in Manufactures: 1920-1938, Inclusive
All Industries Combined.

Years [1]	Primary Horsepower						Rated Capacity of Motors Operated by Current Generated in Establishments Reporting
	Owned					Purchased	
	Totals	Steam Engines and Turbines	Diesel and Semi-Diesel Engines	Other Internal Combustion Engines	Water Wheels and Turbines	Electric	
1920	1,723,717	940,136	—	10,374	181,550	591,657	453,083
1922	1,790,717	924,978	—	10,010	176,639	679,090	503,354
1923	1,931,787	925,490	—	16,827	189,105	800,365	545,580
1924	1,913,297	938,525	—	9,209	182,329	783,234	558,703
1925	2,021,917	935,825	—	11,545	176,934	897,613	568,593
1926	2,015,820	935,266	—	8,739	177,665	894,150	575,044
1927	2,071,766	919,951	—	8,843	165,019	977,953	557,224
1928	2,054,661	857,168	—	7,970	153,323	1,036,200	530,811
1929	2,110,932	842,078	—	9,339	140,390	1,119,125	486,545
1930	2,015,403	760,062	—	11,249	138,129	1,105,963	534,853
1932	1,840,713	645,436	—	6,124	126,190	1,062,963	475,702
1934	1,840,017	607,760	—	7,329 [2]	126,012	1,098,916	482,820
1936	1,897,921	604,415	8,581 [3]	4,672	114,259	1,165,994	495,484
1938	1,841,378	578,865	12,737	7,428	113,423	1,128,925	491,551

[1] For the years 1921, 1931, 1933, 1935, and 1937, the inquiry concerning power was not included on the questionnaire.
[2] Includes seven Diesel engines noted for the first time in 1935.
[3] Tabulated heretofore with Internal Combustion Engines.

Power Laundries in Massachusetts: 1928-1938

Power laundries are not, strictly speaking, manufacturing establishments, but they perform a "service function" and their importance appears to justify the collection, annually, of statistics with reference to their operation, as in the case of manufacturing establishments.

In Table 24 principal data relative to power laundries in Massachusetts are presented for the years 1928 to 1938, inclusive. The total number of power laundries from which reports were obtained in 1938 was 383, which number does not include Chinese or other hand laundries, or laundries in hotels, or those connected with educational or charitable institutions. The term "value of work done" may be defined as the amount charged for services rendered by the power laundries from which reports were obtained. In 1938 the value of work done by the 383 establishments reporting was $19,941,007; the average number of wage-earners employed in these establishments was 10,629, and the amount of wages paid to these wage-earners during the year was $9,217,203.

Eleven laundries which operated in 1937 were discontinued in 1938, and decreases in the laundry industry in 1938 as compared with 1937 were as follows:

Number of wage-earners employed	2.7%
Amount of wages paid	2.0%
Value of work done	2.7%

In the collection of data relative to power laundries in 1938, the division enjoyed the cordial cooperation of the Massachusetts Laundry Owners' Association and certain public accountants, without which the comprehensive census of power laundries could not have been taken.

Table 24.—Principal Data Relative to Power Laundries in Massachusetts for the Years 1928-1938, Inclusive.

Years	Number of Establishments	Cost of Supplies and Materials Used	Amount of Wages Paid During the Year	Average Number of Wage-earners Employed	Value of Work Done
1928	414	$3,459,467	$9,391,674	9,339	$22,364,975
1929	458	3,760,859	11,155,442	10,736	25,615,551
1930	447	3,634,568	10,395,837	10,233	24,537,642
1931	445	3,650,511	10,616,385	10,461	23,343,435
1932	436	2,953,832	8,445,032	9,080	19,589,069
1933	419	2,920,502	7,679,992	9,640	17,756,003
1934	421	2,979,600	7,734,574	9,397	17,791,383
1935[1]	424	3,008,970	8,178,631	9,996	18,841,361
1936	410	3,219,932	8,188,481	10,127	19,537,554
1937	394	3,469,975	9,404,237	10,921	20,487,381
1938	383	3,303,854	9,217,203	10,629	19,941,007

[1] Data for 1935 were furnished by the United States Bureau of the Census and included cleansers and dyers.

Plate 1

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939

Base: Average for Three Years 1925, 1926, 1927=100

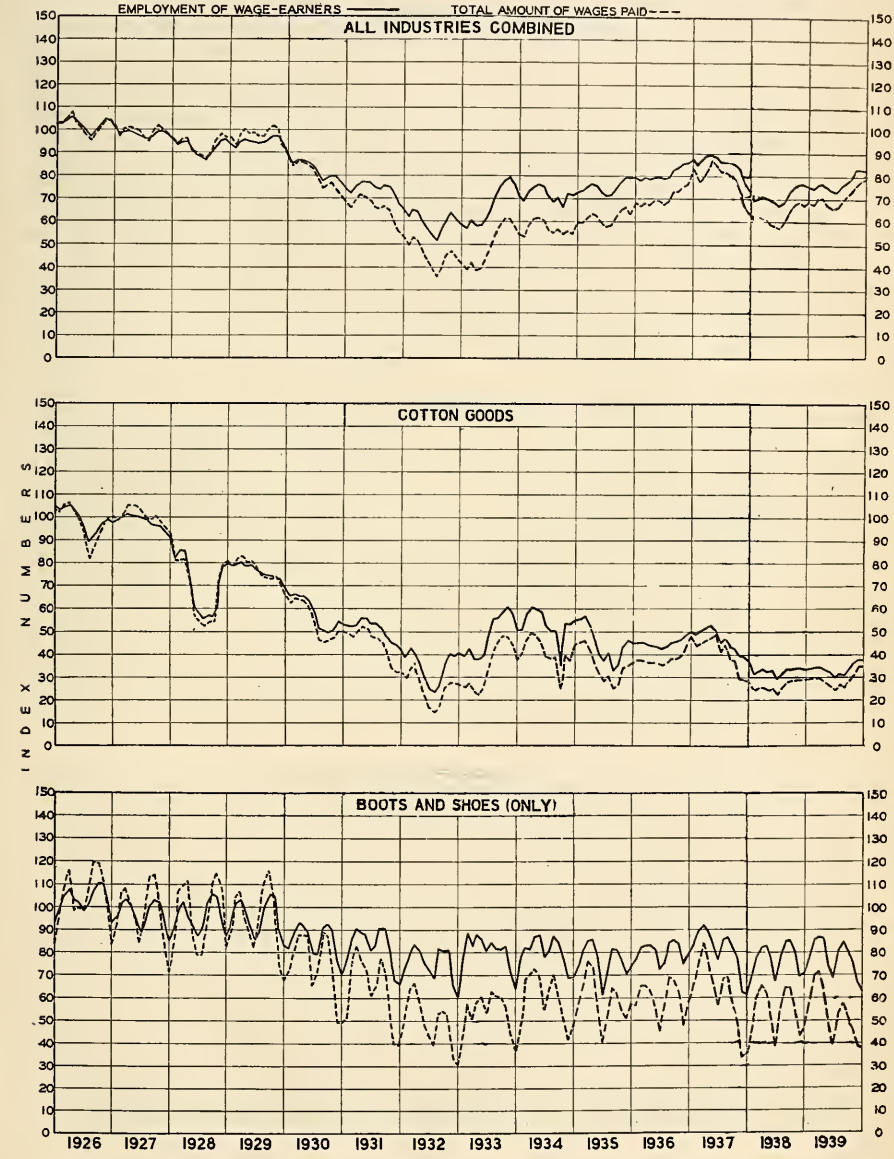


Plate 2

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939 (Continued)

Base: Average for Three Years 1925, 1926, 1927=100

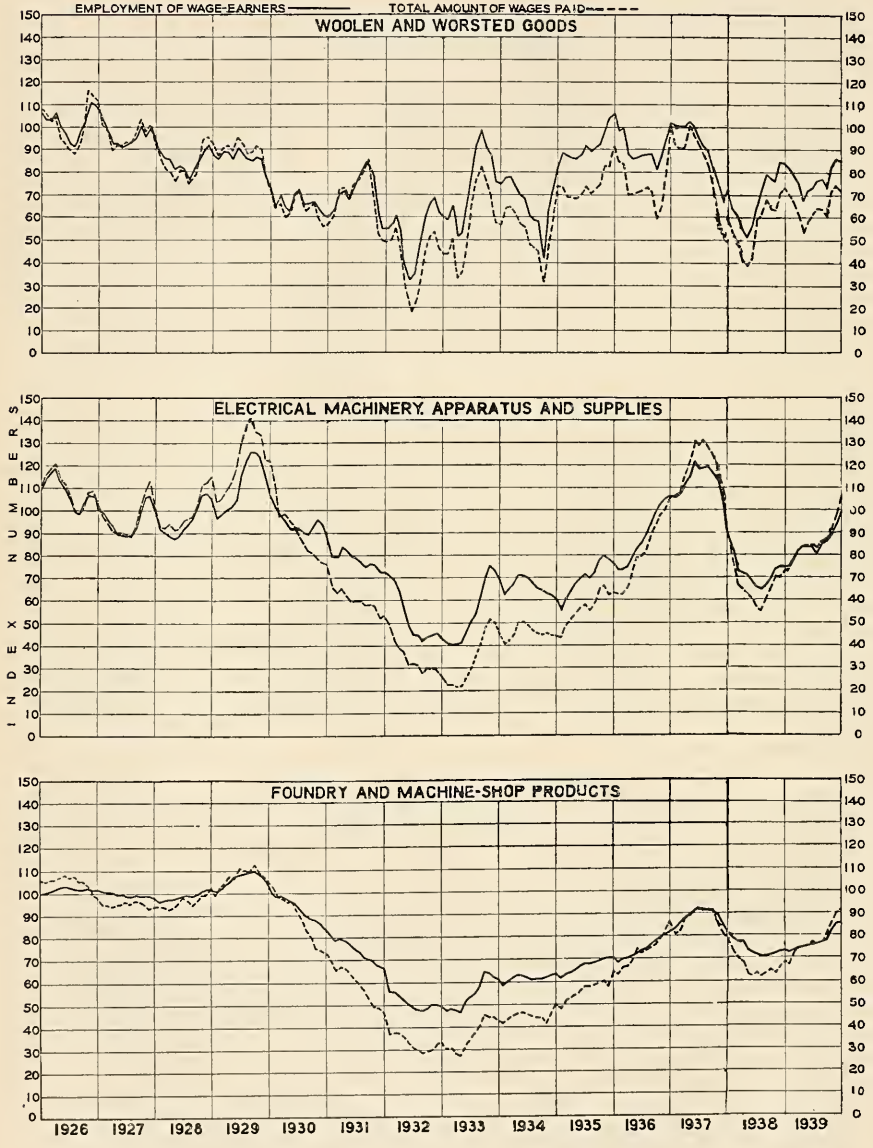


Plate 3

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939 (Continued)

Base: Average for Three Years 1925, 1926, 1927=100

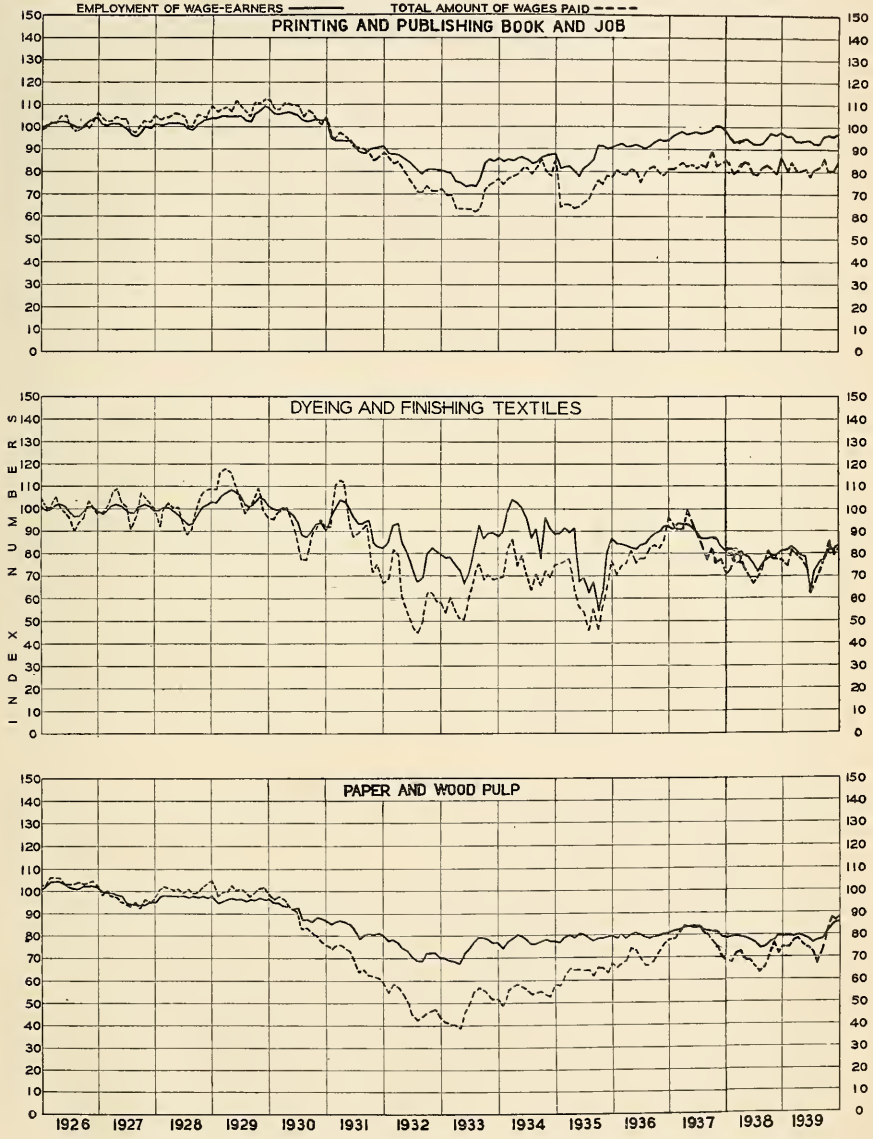


Plate 4

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939 (Continued)

Base: Average for Three Years 1925, 1926, 1927=100

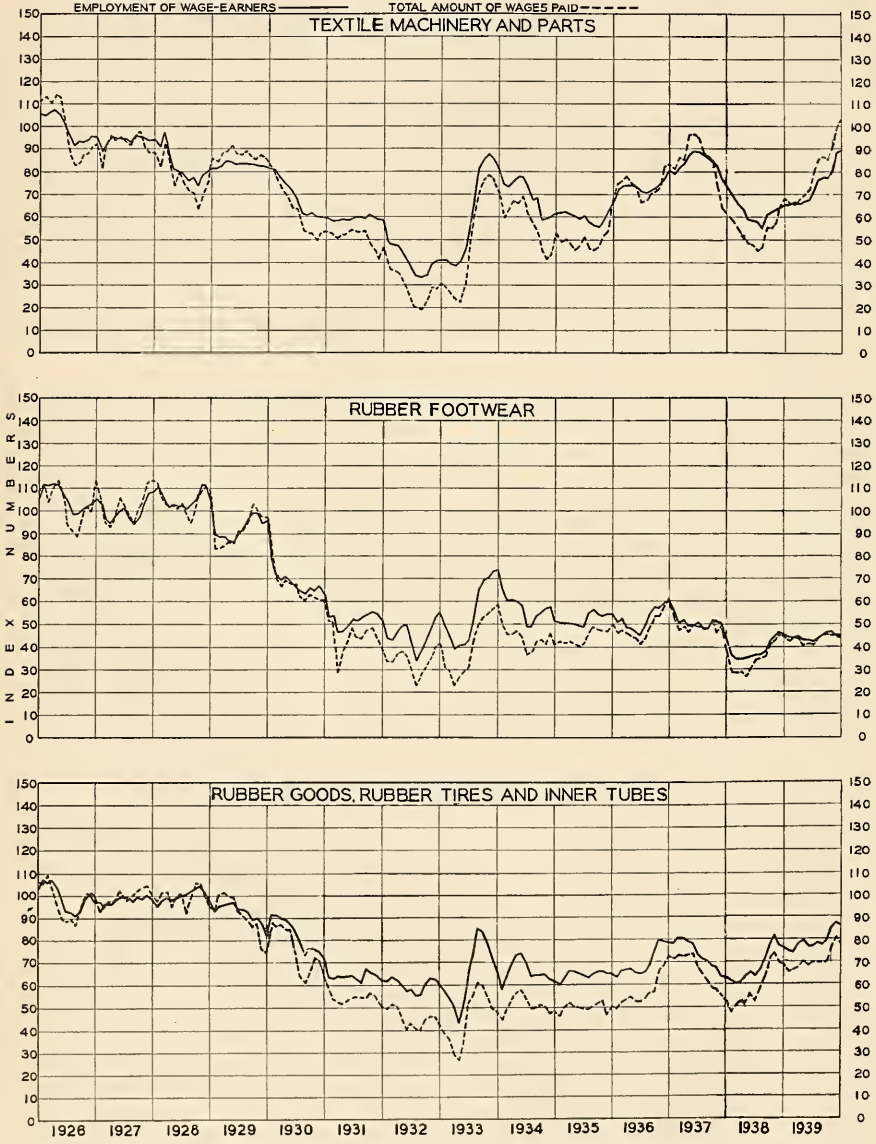


Plate 5

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939 (Continued)

Base: Average for Three Years 1925, 1926, 1927=100

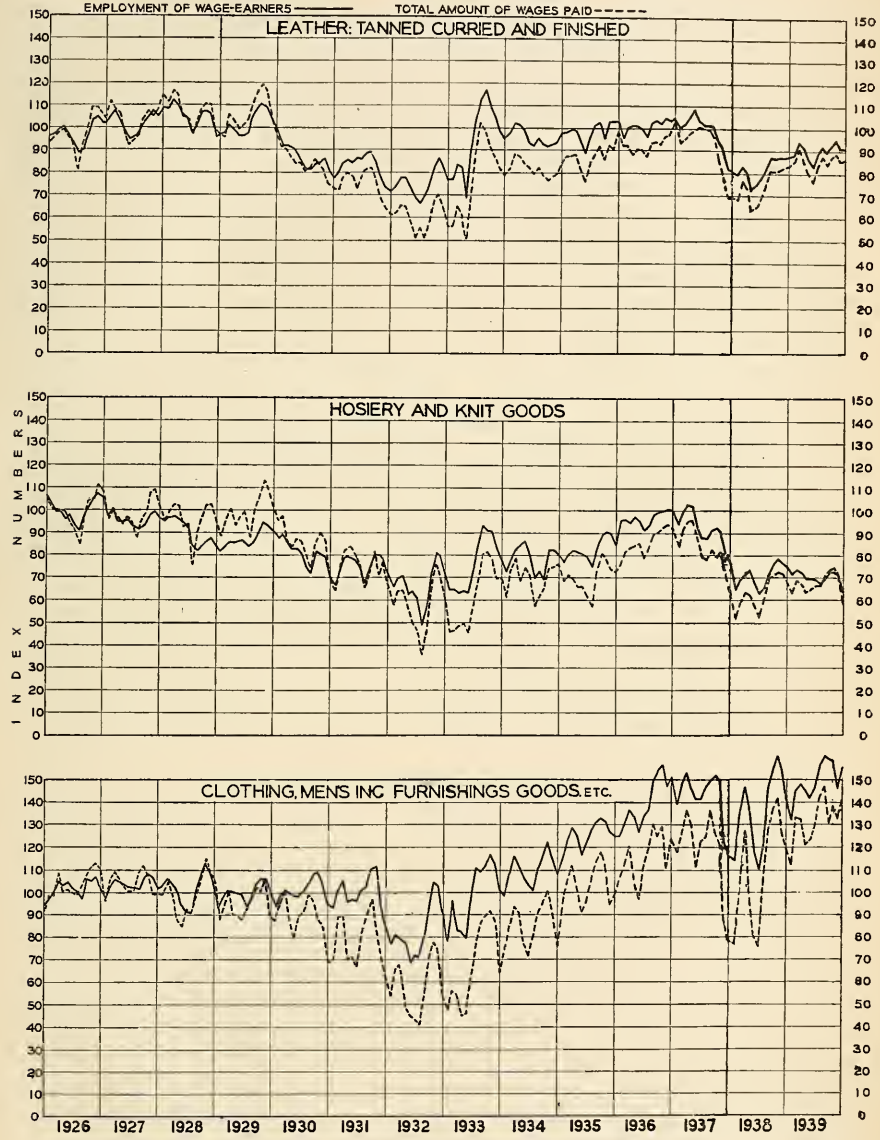


Plate 6

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939 (Continued)

Base: Average for Three Years 1925, 1926, 1927=100

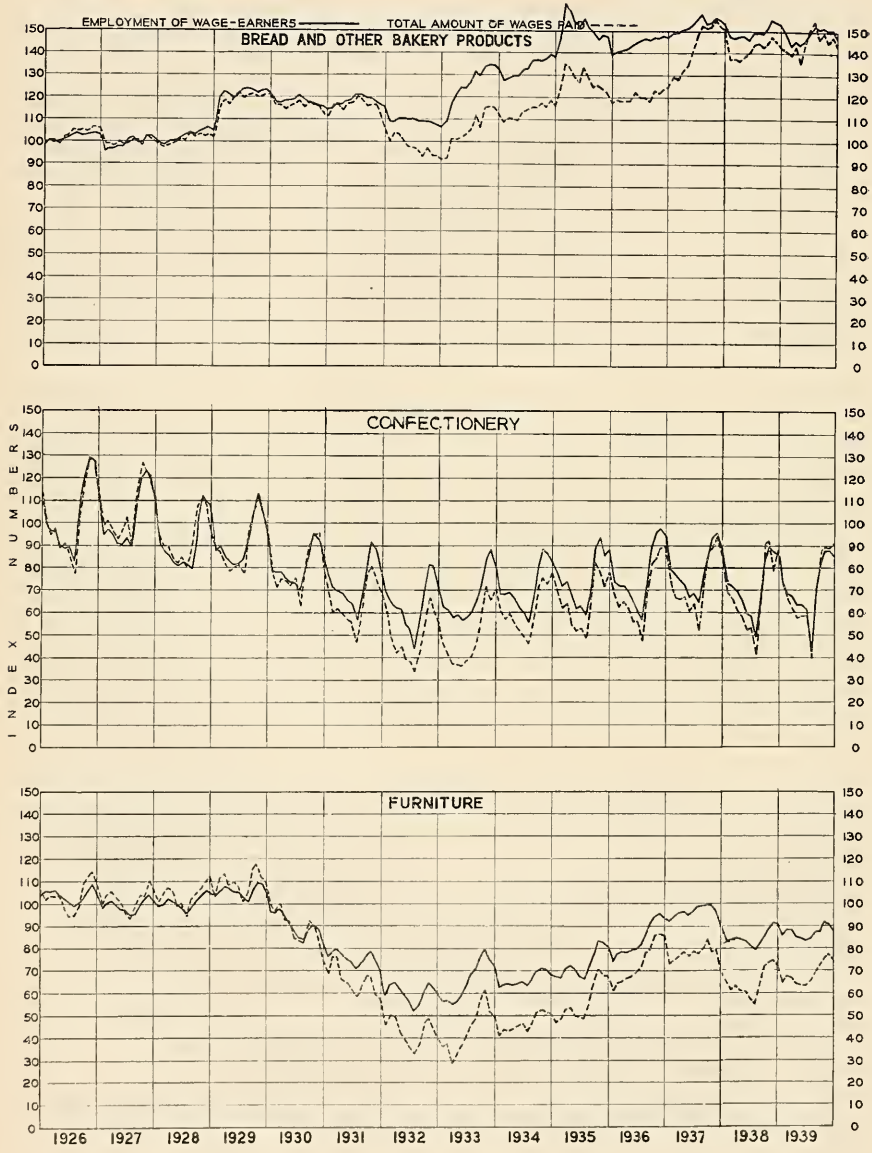


Plate 7

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN MASSACHUSETTS, 1926-1939 (Concluded)

Base: Average for Three Years 1925, 1926, 1927=100

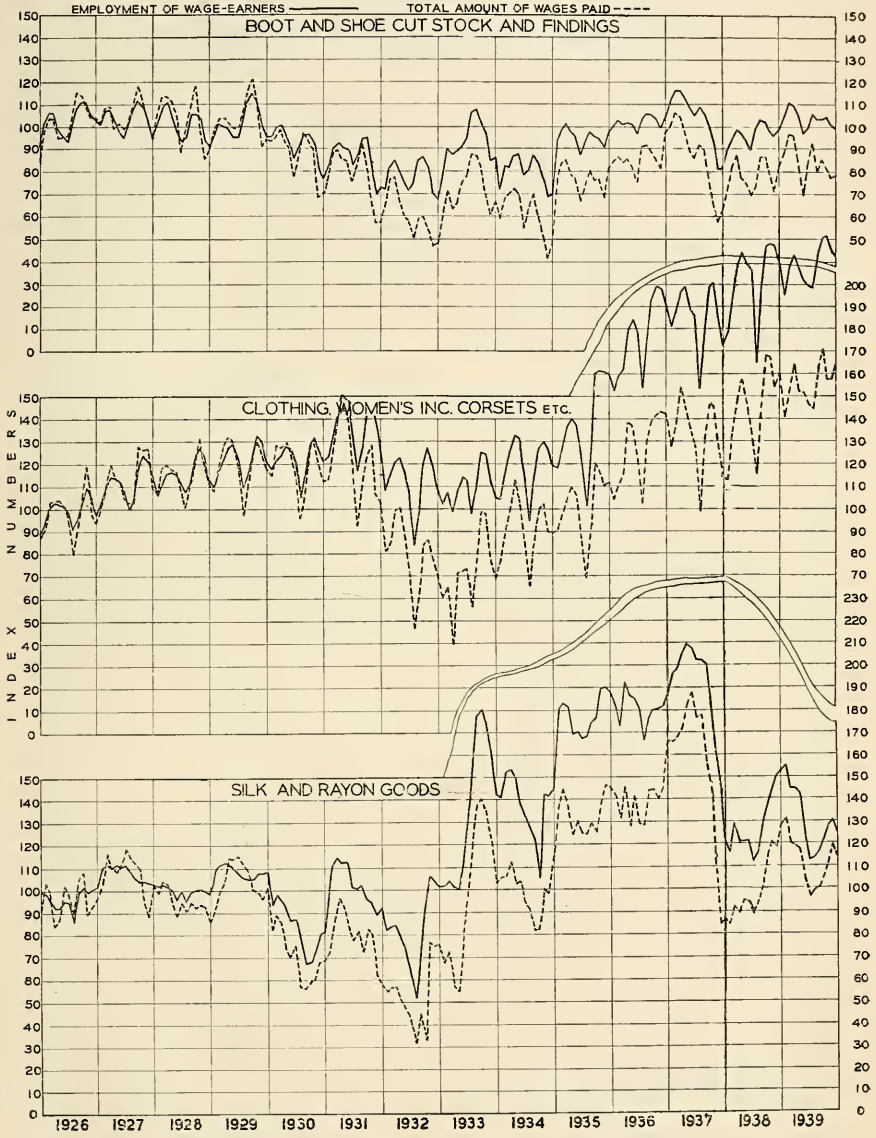


Plate 8

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN 16 LEADING INDUSTRIAL CITIES IN MASSACHUSETTS: 1935-1939

Base: Average for Three Years 1925, 1926, 1927=100

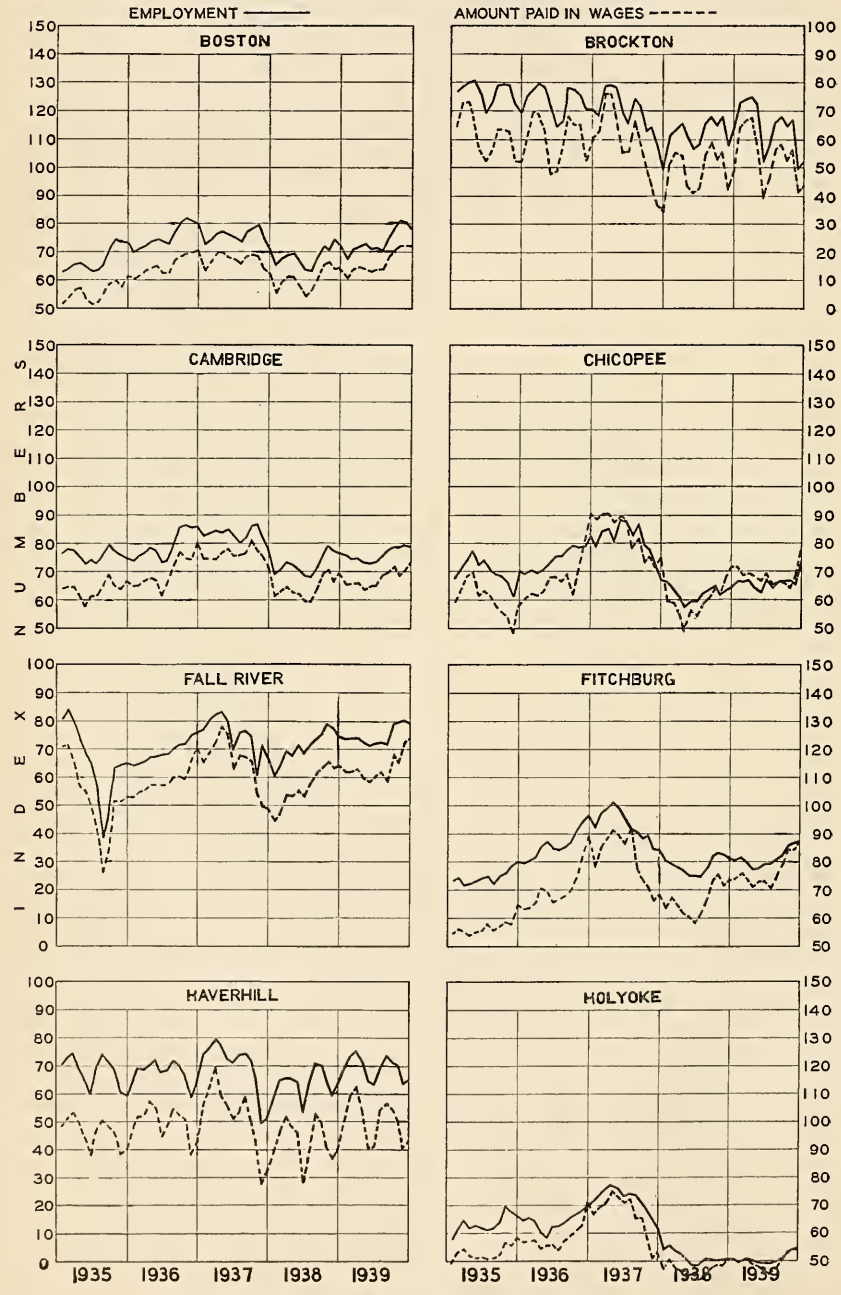


Plate 9

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MANUFACTURING IN 16 LEADING INDUSTRIAL CITIES IN MASSACHUSETTS: 1935-1939 (Concluded)

Base: Average for Three Years 1925, 1926, 1927=100

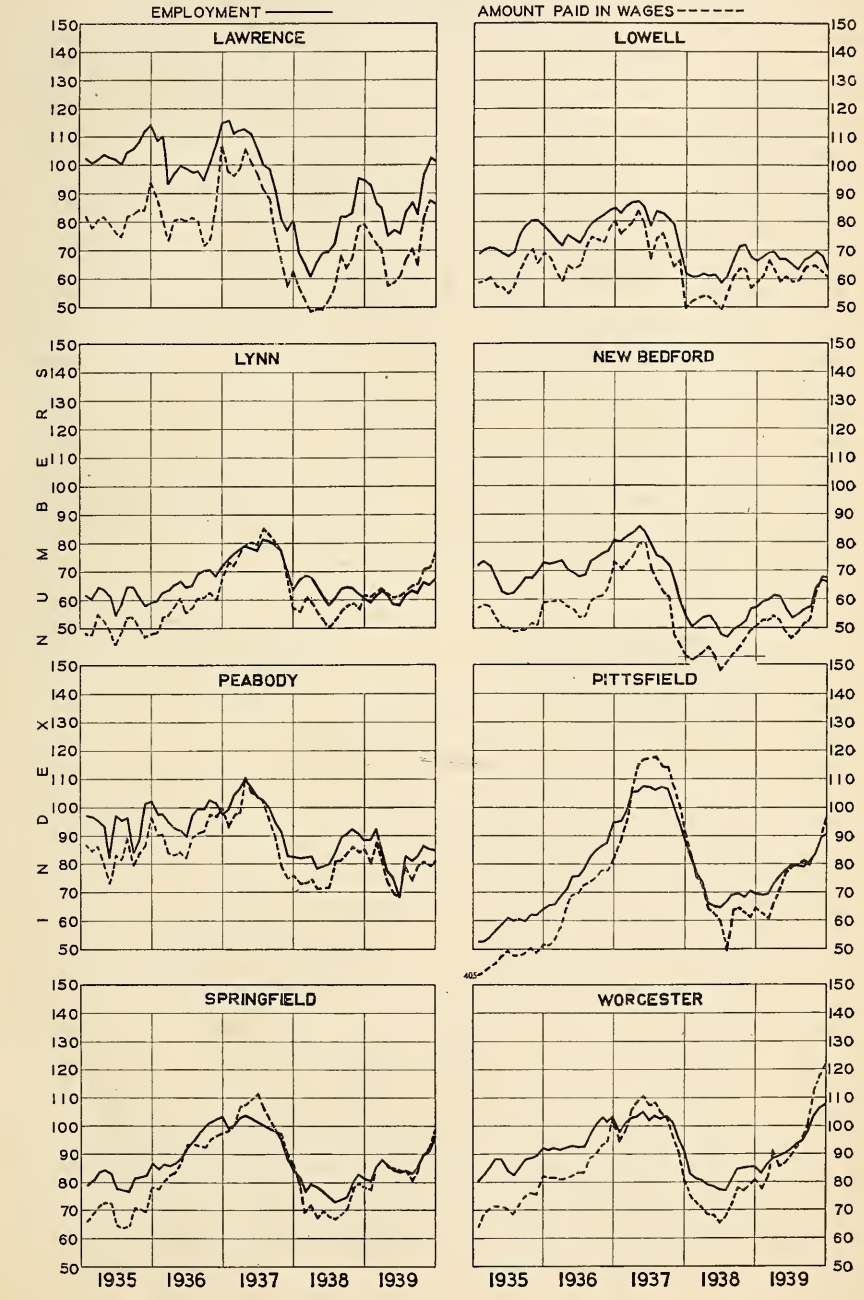


Plate 10

TRENDS OF EMPLOYMENT IN WHOLESALE AND RETAIL TRADE IN MASSACHUSETTS: 1935-1939

Base: Average for Year 1929=100

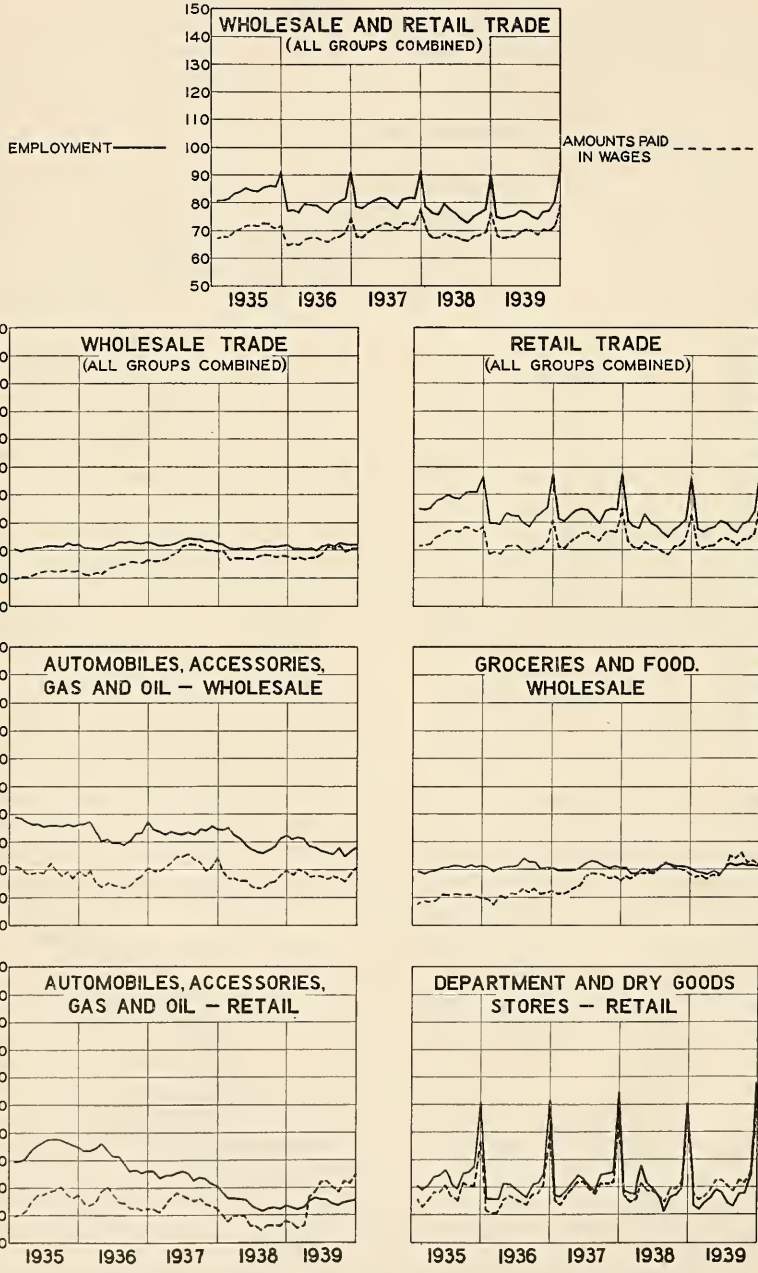


Plate 11

TRENDS OF TOTAL WAGES PAID IN WHOLESALE AND RETAIL TRADE IN MASSACHUSETTS: 1935-1939—(Concluded)

Base: Average for Year 1929=100

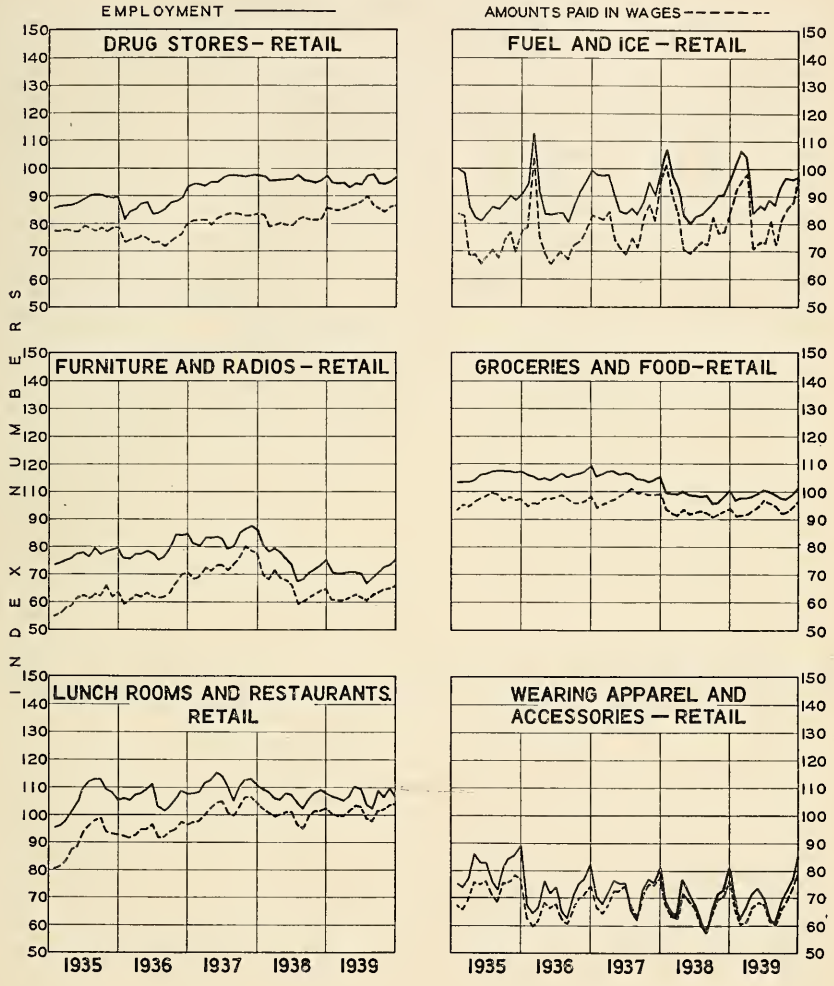


Plate 12

TRENDS OF EMPLOYMENT, TOTAL WAGES PAID, AND MAN-HOURS WORKED IN BUILDING CONSTRUCTION: BY MONTHS; APRIL, 1927-DECEMBER, 1939

Base: Average for Year 1930=100

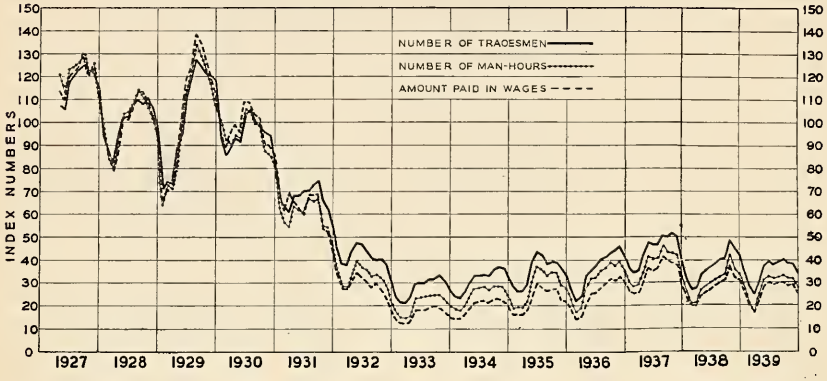


Plate 13

TREND OF PROSPECTIVE BUILDING IN 55 MUNICIPALITIES IN MASSACHUSETTS, ALL CLASSES OF PROJECTS COMBINED: 1927-1939

Base: Average for Year 1927=100

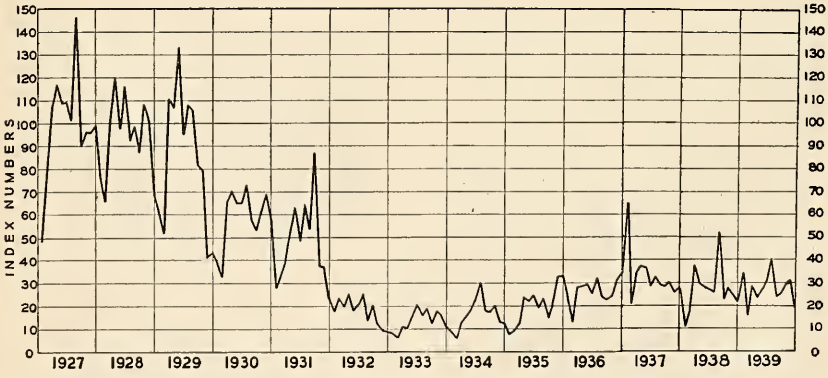
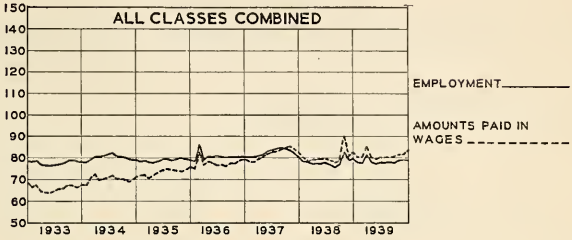
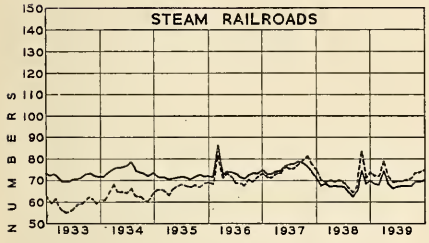


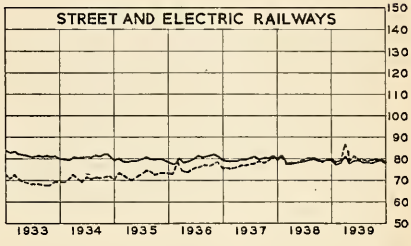
Plate 14

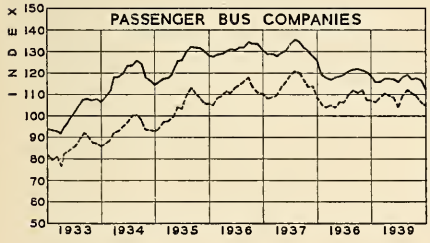
TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID BY PUBLIC UTILITY COMPANIES, 1933-1939

Base: Average for Year 1930=100









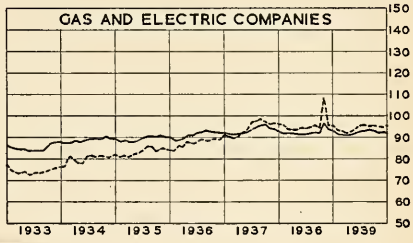


Plate 15

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN MUNICIPALITIES: 1933-1939

Base: September, 1931=100

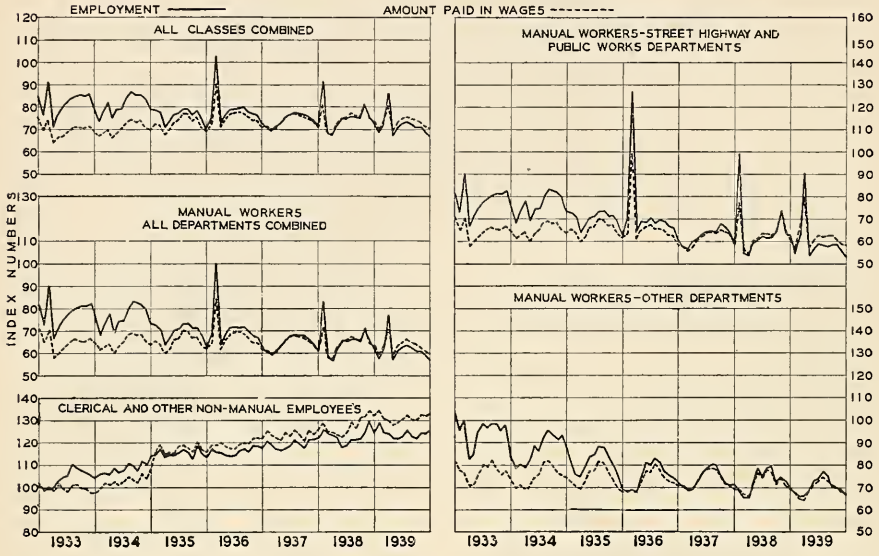


Plate 16

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN 12 MISCELLANEOUS CLASSES OF EMPLOYMENT IN MASSACHUSETTS: 1933-1939

Base: September, 1931=100

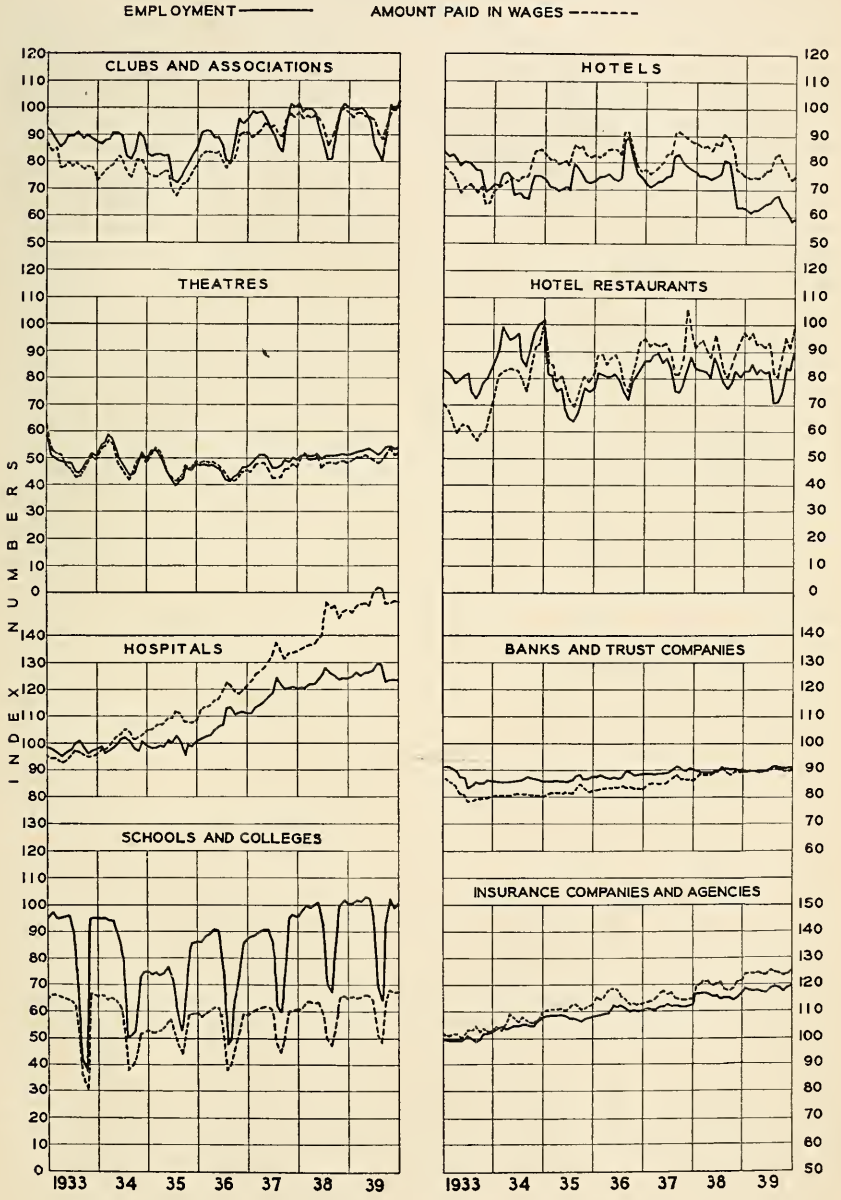
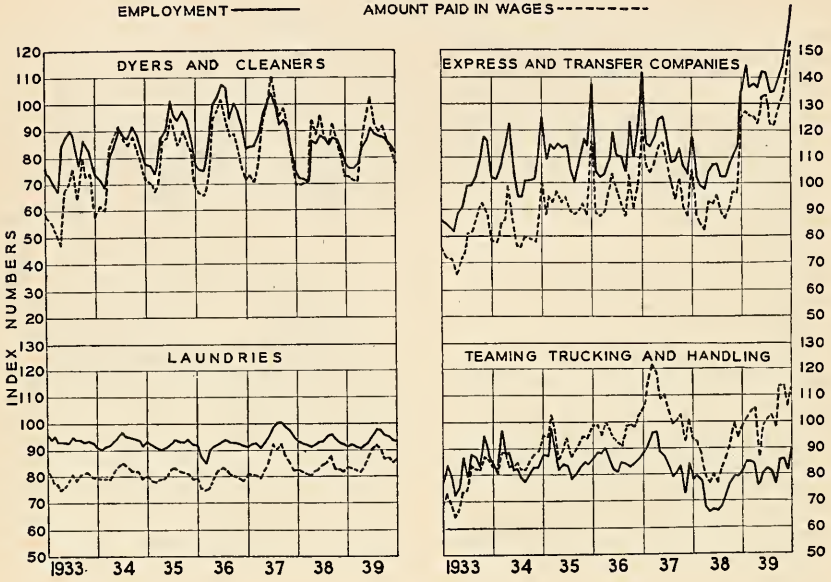


Plate 17

TRENDS OF EMPLOYMENT AND TOTAL WAGES PAID IN 12 MISCELLANEOUS CLASSES OF EMPLOYMENT IN MASSACHUSETTS: 1933-1939 (Concluded)

Base: September, 1931=100



REPORT OF THE DIVISION OF STANDARDS

JOHN P. McBRIDE, *Director*

INTRODUCTION

This division functions primarily as a weights and measures unit cooperating with and assisting the city and town sealers of weights and measures, with added authority to the division on specific items.

One of its cooperative duties is to compare with state standards, every ten years, the standard avoirdupois weights which the commonwealth furnishes each city and town. During this year, this work has been completed and we are now starting the comparison of the standard apothecary and metric weights. This is a long and tedious task, yet is essential as it is the beginning of the accuracy that is required of weighing and measuring devices that are tested by sealers of weights and measures.

These officials methodically and painstakingly test all weighing and measuring devices used for buying or selling goods, wares or merchandise; for public weighing; or for hire or reward; and thus assure the public that the devices are accurate.

The ideal supplement to this work, in the field of consumer protection, is a public consciousness of this fact, manifested by an interest in the readings of these devices when purchasers are present at the time of sale. By this I do not mean that all our merchants are dishonest and bear watching, quite the contrary is true, but this alertness will prevent errors that may come in by reason of carelessness on the part of some and dishonesty on the part of others. Sometimes the operator of a weighing device reads it too quickly and on occasion we have found operators quoting a reading other than the actual scale reading. It will also be refreshing to note the number of merchants that are honest.

It is the aim of this division to encourage this attitude and to emphasize to the merchant the importance of displaying the weighing apparatus to the full view of the customer as an open invitation to check with the merchant the important act of determining the quantity of the purchase. Frequently we see the admonition posted at a cashier's cage "COUNT YOUR CHANGE." The purpose of this warning is, of course, to settle disputes at the place of transaction and the same reasoning should prevail in the case of quantity determination. It is far better to do this and know how you have been treated rather than have a suspicion that you have not received what you paid for. This suspicion is often unfounded and is unfair to the merchant.

The present cost of commodities is such as to make it imperative that the consumer get exactly what he pays for and the merchant can not afford to give more than is paid for. The consumer must make comparisons of value and this is generally accomplished by comparisons of the three factors, price, quality and quantity. Quality is the most difficult to ascertain and the consumer is not equipped to accurately determine this factor. Price and quantity however, are constant factors and can be readily ascertained. In the circumstance of sales from bulk, quantity may be observed at the time of sale and on packaged goods, by observation of the marking on the package as to quantity of content.

The trend of modern merchandising has for some time been toward packaging the merchandise in advance of sale, as against the old custom of sale from bulk when the quantity was determined at the time of sale. The newer system has many advantages, but it has been considerably abused by deceptive packages and packaging of the same commodity over a large range of sizes not justified by good commercial practice and fairness to the consumer. This has developed many off-size packages such as 3-oz., 3½-oz., 7-oz., 14-oz. and 15-oz., against the previously-established quantities of ¼-lb., ½-lb. and 1-lb., etc.

Our law requires that all food in package form be plainly and conspicuously marked with a statement of the net quantity of content. The Federal Food and Drug Act likewise requires that food in package form be plainly and conspicuously marked with a statement of the net quantity of content. The Federal Act has recently been amended and emphasizes that the statement of quantity of content be an accurate one and further requires that the package bear the name and address of the manufacturer, packer or distributor. Regulatory power is also contained in this new law to control slack-filled packages and deceptive packages.

A considerable amount of the packaged merchandise coming into our market comes from other states and the federal law is, therefore, an important cog in this phase of weights and measures activity. There is nothing, however, in the federal law authorizing standardization of size of packages or of quantity. I believe that this matter should properly be a federal enactment because of the fact that the preponderance of packaged goods is of national distribution and, therefore, interstate.

Weights and measures officials of the various states of the Union are seeking to effect a standardization on a quantity basis on goods packaged in anticipation of sale; thus eliminating the present confusion to which the consumer is subjected when viewing packages apparently of equal size. This contemplates accepted quantities such as 1, 2, 3 and 4-oz. liquid and avoirdupois weight in smaller packages of both liquids and solids; 8-oz., 12-oz., 1-lb., 1½-lb. and multiples of the pound avoirdupois weight in larger packages of solids; and 8-oz., 12-oz., 1-pt., 1-pt.-8-fl.-oz. and 1-qt. and multiples of the pint to the ½-gal., and ½-gal., 1-gal. and multiples of the gallon in larger packages of liquids.

The advantage of this method would lie in presenting to the consumer packages varying uniformly in quantity and while the cartons might still be of varying sizes, this variance might be confined to the height only, as it could very well be a requirement that the diameter or base dimensions of the different sizes be uniform.

This plan of a standardization on the basis of quantity has been offered to the packers for acceptance without the necessity of legislative enactment and effort will be made to work it out on these lines.

The standardization by size of container was the original thought of the packers, but this has not been followed closely and has resulted in a great multiplicity of containers with odd quantities, which is confusing to the consumer and offers some advantage to the unscrupulous dealer.

The best degree of success of this division's work in the public interest is achieved with full cooperation of the city and town sealers of weights and measures and we have received that cooperation. Many of these officials are of long-time service and are rapidly reaching retirement age, but it must be said to their credit that they have left a good foundation for their successors to build upon.

In November of 1939, James A. Bagley, Sealer of Weights and Measures of the City of Chicopee, one of the outstanding local officials, was suddenly taken out of this life by death. Mr. Bagley had served as President of the Massachusetts Sealer's Association and at the time of his death was its secretary and treasurer. He contributed materially to the cause of weights and measures enforcement and his passing marks a distinct loss.

The revenue from all sources showed an increase over 1938 of $843.50.

Legislation Enacted in 1939

The following legislation affecting the work of this division and the sealers of weights and measures was enacted during the legislative session:

Chapter 122—standardizing the capacity of barrels containing malt beverages and the variances and tolerances permitted in relation thereto. This law sets up a new standard barrel for malt beverages as of the capacity of 31 gallons, thus conforming to the federal accepted barrel for this commodity, and repeals

the previous provision of the law allowing a tolerance of 6% and establishing as a new tolerance 3% over and under the standard capacity of 31 gallons. The previous law had been in operation since pre-prohibition days and was out of line with present accuracy requirements. Chapter 207—an Act further regulating closing-out sales, so-called, and similar type sales. This law requires filing of inventory and surety bond on "closing-out sales," "going-out-of-business sales," "discontinuance-of-business sales," "removal sales," or other designation of like meaning when such sales are conducted at any place other than the usual place of business which the party has maintained for at least one year prior to such sales. Chapter 261—this law places under one Director the Division of Standards and the Division on the Necessaries of Life and provides that the Director of Standards shall be in charge of the Division of Standards and the Division on the Necessaries of Life under the title of "Director of Standards and Necessaries of Life." The Division on the Necessaries of Life is generally regarded as a clearing house of many types of complaints which have relation to prices. Among its duties is investigation of the circumstances affecting the price of fuel, gasoline, refined petroleum products, and other products which are necessaries of life. It will be readily seen that there is an opportunity of cooperative work for the public interests on the part of weights and measures officials as a result of these two divisions operating under one head.

The Federal Food, Drug, and Cosmetic Act enacted by the 75th Congress amended the previous Food and Drug Act by enlarging the scope of commodities coming within the provisions of this act and giving additional regulatory authority to cover the field of slack-filled containers and deceptive containers.

Division Publications

The publications during the year were Bulletin No. 33 and the Director's Annual Report. This bulletin contained the full text of the laws enacted in the years 1938 and 1939, with pertinent excerpts from the Federal Food and Drug Act; instructions in relation to testing vehicle tank meter systems; changes in specifications and tolerances in relation to vehicle tank meter systems, liquid-measuring devices and scales; and a supplementary list of approved devices.

Clinical Thermometers

The regulations governing the manufacture and sale of clinical thermometers require that manufactures who have been authorized to impress the MASS SEAL on their products shall report to this office all sales and shipments of clinical thermometers upon which they have affixed the MASS SEAL mark. These reports show that during the past year sales and shipments of 344,493 thermometers were so made, of which 167,913 were sold in Massachusetts and 176,580 were sold in other states and the Dominion of Canada. These figures show a material increase over the previous year.

Five manufacturers applied for authority to affix the MASS SEAL on additional types, which authority was granted.

Laboratory Work

Calibration of Standards for Cities and Towns

Article	*Tested*	*Adjusted*	*Sealed*	*Condemned*
Avoirdupois weights	714	132	714	—
Apothecary weights	170	—	170	—
Metric weights	153	8	151	2
Troy weights	35	—	35	—
Totals	1,072	140	1,070	2

CLINICAL THERMOMETERS

DESCRIPTION	*Tested*	*Passed*	*Rejected*	*Percent Passed*
Massachusetts seal	471	467	4	99.15
Unsealed	3,362	3,114	248	92.62
Totals	3,833	3,581	217	

Fees received for testing clinical thermometers amounted to $234.50.

The majority of unsealed thermometers represent thermometers which have been submitted by manufacturers in connection with their application for authority to use MASS SEAL as well as thermometers which were submitted by a large western university for test and certification of clinical thermometers which they had purchased on the specification that these thermometers conform to Massachusetts requirements.

Cans, Cartons, and other Containers, Measures, and Weighing and Measuring Devices submitted in connection with Manufacturers' applications for approval or for authority to affix the Manufacturers' Seal thereon.

ARTICLES	*Tested*	*Accurate*	*Inaccurate*
Cartons for use in sale of ice cream, etc	113	109	4
Glass Graduates	12	4	8
Computing scales	13	11	2
Paper milk bottles	2	2	—
Computing scale charts	15	15	—
Person weighing scales	3	2	1
Egg-grading scale	1	—	1
Spring scales	2	2	—
Counter	1	1	—
Grease-measuring devices	1	1	—
Automatic slot machines	3	—	3
Liquid measures	1	—	1
Selective valve controls	3	1	2
Hose nozzle	1	1	—
Milk jars	4	4	—
Cloth seals	12	12	—
Totals	187	165	22

Miscellaneous Tests

ARTICLES	*Tested*	*Adjusted*	*Accurate*	*Inaccurate*
Automatic test measures for gasoline and oil meters, etc.	2	—	2	—
Avoirdupois weights	201	8	201	—
Metric weights	1	—	1	—
Troy weights	6	6	6	—
Surveyors' spring scales	3	—	2	1
Surveyors' tapes	10	—	10	—
Shellfish rings	35	—	35	—
Shellfish cans	8	—	8	—
Dry measures	5	—	3	2
Beer bottles	1	—	—	1
Capacity of perfume vial	1	—	1	—
Potato chip containers	20	—	20	—
Berry baskets	1	—	1	—
Tank truck meter ticket-issuing devices	1	—	1	—
Totals	295	14	291	4

Other laboratory work included 139,284 yards of thread remeasured; 4 samples of coal sized and specific gravity determined; 7 rolls of toilet tissue counted.

Field Work of Inspectors

Large Capacity Scales

During the past year tests were made of 644 large-capacity scales in one hundred and eighty-six cities and town, with the aid of the division's test truck.

Of the 644 scales tested, 458 were found accurate upon initial test; 88 required minor adjustments and 98 required replacements or major repairs.

The above figures show that we tested 240 more scales than in the previous year and visited 71 additional cities and towns. This was occasioned principally because of the enlargement of the program of this activity and in part due to rechecking of scales that had been inundated in the area flooded during the hurricane of September 1938.

Heavy-capacity-scale owners in this area were requested to have their scales cleaned out and checked prior to test and these owners cooperated in this respect, thus permitting the operation of our unit with a minimum expenditure of time.

It is expected that the demand for this type of test will continue to increase as cities and towns are not adequately equipped to test heavy-capacity scales as now existing and as are contemplated in future installations.

It is not our plan to test all heavy-capacity scales, as our facilities do not permit this work, but we intend to establish throughout the commonwealth, master scales within reasonable proximity of each other to serve as an aid to the sealers of weights and measures in testing scales which we are not able to reach.

Bulk Storage and Tank Truck Meter Systems

The division's testing units, consisting of three portable tanks of one-thousand, one-hundred and fifty-gallon-capacity respectively, visited one-hundred and twenty-two cities and towns, testing 313 tank truck meter systems. The test results showed 184 of these systems to be accurate on initial test; 105 required adjustment and 24 were condemned for major repairs or replacement. 190 of these systems were manifolded and were equipped with selective valve control.

There were 159 bulk storage meter systems tested and 119 of these were found accurate on initial test; 30 required minor adjustments and 10 were condemned for major repairs or replacement.

Other activities of the inspectors in the field included:

Number of inspections: Hawker and pedler, 1,357; Transient vendor, 331; Store inspections, 1,311; Net weight markings, 13,156; Coal certificates, 393; Clinical thermometers, 328; Climax baskets, 2; Paper wood bags, 1; Fuel oil certificates, 1; Total, 16,880.

Weighing and measuring devices: Inspected, 10,880; Sealed, 9,887; Unsealed, 993; Tested, 12,961; Accurate, 12,394; Inaccurate, 567.

Reweighings

Commodities	*Number*	*Correct*	*Under*	*Over*
Coal (loads)	393	64	120	209
Coal (bagged)	1,210	353	376	481
Packages of food, etc.	11,660	4,158	3,906	3,596
Miscellaneous	4	2	—	2
Totals	13,267	4,577	4,402	4,288

Remeasurements

Commodities	*Number*	*Correct*	*Under*	*Over*
Fuel oil	91	25	54	12
Test measures	1	1	—	—
Vehicle tank compartments	6	6	—	—
Miscellaneous	8	—	8	—
Totals	106	32	62	12

State Institutions

Articles	*Tested*	*Adjusted*	*Sealed*	*Condemned*
Scales	465	98	436	29
Weights	1,487	62	1,468	19
Liquid measures	14	1	10	4
Liquid-measuring devices	13	2	10	3
Totals	1,979	1,924	163	55

Inspections and tests were made of 17 gasoline and fuel oil meter systems installed under working conditions and submitted for approval under General Laws, chapter 98, section 29.

Devices submitted for approval are subjected to rigid inspection to insure that they are of such design, construction and materials that they may reasonably be expected to withstand ordinary usage without impairment of the accuracy of their measurement, or the correct functioning of their operating or indicating parts. The devices are likewise tested under any and all conditions that might arise in commercial use and must test reasonably accurate and constant before approval is granted.

There were twenty-four applicants for certificate of fitness as measurers of leather examined, twenty-three of whom passed and one of whom failed to pass. Certificates were issued to the twenty-three successful applicants.

There were sixty-three complaints investigated involving violations of the various laws.

Prosecutions

The inspectors prosecuted 41 cases, resulting in 34 findings of guilty; 1 discharge; and 6 defendants pleaded nolo contendere. The court disposed of these cases by imposing total fines of $435, and filed 11 cases.

Nature of Offense	Number of Complaints	Convicted	Discharged	Pleaded Nolo	Filed	Fines Imposed
Giving insufficient weight	10	9	—	1	4	$200
Attempting to give insufficient weight	1	1	—	—	—	5
Giving insufficient measure	2	—	—	2	2	—
Attempting to give insufficient measure	7	6	—	1	1	50
Possession of measuring device not conforming to legal standards	2	2	—	—	1	5
Possession of false scale	1	1	—	—	—	10
Possession of unsealed scale	1	1	—	—	1	—
Peddling without license	8	8	—	—	1	75
Conducting transient business without license	9	6	1	2	1	90
Totals	41	34	1	6	11	$435

Office Work

Weighing and measuring devices approved as to design and construction under section 29, chapter 98, General Laws, included 11 computing scales, 1 spring balance, 1 counter scale, 1 egg-grading scale, 1 scale chart, 1 selective valve, 1 grease-measuring device, 1 hoze nozzle and 1 computing head.

Under section 22, chapter 98, General Laws, there were 126 sizes and types of paper or fibre cartons approved for use in the sale of ice cream and certain other specified articles and 20 fibre milk jars.

Under section 283, chapter 94, General Laws, 7 coin-operated devices were approved.

Under section 13, chapter 98, General Laws, 5 manufacturers of clinical thermometers were authorized to affix the manufacturers' seal upon additional types of clinical thermometers.

Under section 47, chapter 98, General Laws, 13 glass graduates were approved.

Under section 15, chapter 98, General Laws, 4 types of glass milk jars were approved.

Twelve styles of cloth seals for use by sealers of weights and Measures were examined by this office and approved.

The following disapprovals were issued: 8 glass graduates, 3 coin-operated machines, 1 person-weigher scale and 2 computing scales, 1 liquid measure, 4 paper cartons and 2 types of selective valve.

Under section 3, chapter 101, General Laws, $9,000 in cash was deposited and surety bonds amounting to $169,500 were filed with the Director by applicants for transient vendor licenses. As shown by the detailed financial statement which concludes this report, the total of $116,461.80 was received from all sources, including fees for hawker and pedler licenses and transient vendor licenses, transfer fees, pedlers' license plates and badges and fees for testing clinical thermometers.

Hearings were given to 24 firms and individuals upon complaints of the violation of the law governing the marking of food in package form, labelling of bread, licensing of hawkers and pedlers and minor infractions of the weights and measure laws.

Licenses

Transient Vendors

There were 355 transient vendor licenses issued and $8,875 received in fees therefor. Nine persons were prosecuted for failure to comply with this license requirement. These figures represent a slight increase over last year.

A legislative petition to exempt from the requirements of the transient vendor license law, persons domiciled in the city or town wherein the transient business was being conducted, failed of enactment into law. Under the terms of the present law, the transient vendor license runs for a period of one year from date of issue. A legislative petition to amend this law so as to set the expiration date of all licenses on a fixed date was defeated.

Hawkers and Pedlers

There were 4,851 hawker and pedler licenses issued and 1,158 transfers of licenses for which fees were received. While these figures show an increase of 133 licenses, the actual difference over the previous year in classes of license show an increase of 26 State licenses, an increase of 302 County licenses; a decrease of 49 city licenses and a decrease of 147 town licenses.

In addition to the above licenses, 285 special licenses as hawkers and pedlers were issued to disabled veterans. No fee is received on this class of license. This shows a slight decrease over this class of license issued during the previous year.

In the enforcement of both the transient vendor and hawker and pedler license law, we received assistance from and cooperated with the local Chambers of Commerce, the Boston Better Business Bureau and local enforcement authorities.

Educational and Cooperative Activities

During the year we received cooperation from officials of this and other States and in return extended our cooperation to such officials as well as to manufacturers and business organizations.

In one instance, at the request of a concern in California, a cargo of wool, consisting of 13,528 pounds, and shipped by boat to the Port of Boston, was reweighed on arrival here to check discrepancies that appeared on warehouse receipts.

In another instance, an agreement was reached with the American Institute of Meat Packers whereby they would recommend a change in policy in relation to their dealings with retail meat dealers so as to include as tare the weight of wrapping paper in shipments of wrapped meats to Massachusetts. The previous policy had been to bill wrapped meats at weights taken after wrapping.

Talks were given by the inspectors and myself to various organizations in relation to weights and measures. With the inspectors, I attended the Annual Conference of Sealers of Weights and Measures at Boston. I also attended the National Conference of Weights and Measures Officials of the United States at the National Bureau of Standards at Washington.

On several occasions, an inspector of this division was called to testify in the federal courts in tax evasion, supported in part by results obtained through our inspectional activities on certain packaged liquor goods.

Local Sealers of Weights and Measures

Section 37, chapter 98, General Laws, requires local sealers of weights and measures to file with the Director of Standards and Necessaries of Life, between the first and tenth of January in each year, a report of work performed together with an inventory of standards and working equipment in possession of his city or town. The following summary is compiled from these reports. The towns of Monroe and Rockport failed to perform this statutory duty and therefore the work performed by them cannot be included in this summary.

Summary of Local Sealers' Work

Articles	*Adjusted*	*Sealed*	*Not Sealed*	*Condemned*
Scales				
Platform (over 10,000 lbs.)	317	1,476	14	91
Platform (5,000 to 10,000 lbs.)	385	858	29	21
Platform (100 to 5,000 lbs.)	2,430	17,104	727	504
Counter (100 lbs. or over)	243	1,860	50	60
Counter (under 100 lbs.)	1,231	12,065	282	260
Beam (100 lbs. or over	162	1,544	62	42
Beam (under 100 lbs.)	46	508	10	12
Spring (100 lbs. or over)	209	3,893	30	170
Spring (under 100 lbs.)	2,935	22,770	313	893
Computing (100 lbs. or over)	106	491	9	35
Computing (under 100 lbs.)	3,514	22,179	844	1,103
Person weigher (slot)	55	4,726	42	303
Prescription	100	1,628	4	35
Jewelers'	24	394	—	13
Totals	11,757	91,496	2,416	3,542
Weights				
Avoirdupois	3,374	81,029	486	732
Apothecary	54	20,861	—	339
Metric	129	8,675	78	148
Troy	57	4,306	6	57
Totals	3,614	114,871	570	1,276
Capacity Measures				
Vehicle tanks (compartments)	—	1,183	—	7
Liquid measures over 1 gallon	7	5,465	2	116
Liquid measures	7	18,478	47	436
Ice cream cans	—	1,207	—	—
Glass graduates	—	79	—	31

Oil bottles	—	2,913	3	23
Milk jars	—	146	—	—
Dry measures	—	623	—	—
Fuel baskets	—	520	—	13
Totals	14	30,614	52	626
Automatic Measuring Devices				
Gasoline pumps	214	2,688	440	119
Gasoline and oil meter systems	2,649	22,331	529	926
Kerosene pumps	60	1,779	137	87
Lubricating oil pumps	518	5,301	6,781	95
Grease-measuring devices	96	4,957	490	153
Molasses pumps	—	67	10	—
Quantity stops (on measuring pumps)	463	14,635	129	10
Tank truck meter systems	694	3,598	22	267
Bulk storage meter systems	183	997	34	38
Leather-measuring machines	—	292	11	8
Totals	4,877	56,645	8,583	1,703
Linear Measures				
Yardsticks	—	5,410	4	70
Tapes	—	34	—	—
Taximeters	—	1,561	—	64
Cloth-measuring devices	—	696	—	31
Totals	—	7,701	4	165
GRAND TOTALS	20,262	301,327	11,625	7,312

Fees	
Sealing fees collected	$59,240.74
Adjusting charges	3,459.69
Total collected	$62,700.43

Reweighings and Remeasurements

Commodities	*Number of Reweighings, etc.*	*Correct*	*Under*	*Over*
Beans	9,159	6,631	1,052	1,476
Bread	36,697	22,527	3,373	10,794
Butter	31,044	26,734	2,549	1,761
Charcoal (in paper bags)	1,183	955	196	32
Coal (in paper bags)	15,581	11,955	1,258	2,368
Coal (in transit)	1,923	867	235	821
Coke (in paper bags)	505	489	4	12
Confectionery	7,223	5,951	300	972
Dry commodities	33,049	26,284	2,085	4,680
Dry goods	237	197	35	5
Flour	23,759	17,917	4,125	1,717
Fruits and vegetables	17,326	13,646	1,308	2,372
Grain and feed	1,556	736	473	347
Hay	49	24	13	12
Ice	446	490	33	223

Kindling wood (in paper bags)	3,105	3,086	8	11
Lard	7,599	5,236	1,861	502
Liquid commodities	4,046	3,258	621	167
Meats and provisions	12,119	9,664	1,018	1,437
Potatoes	12,021	6,688	2,326	3,007
Wood (cord)	61	43	11	7
Wood (kindling)	202	202	—	—
Miscellaneous	619	572	13	24
Totals	219,509	164,152	22,897	32,747

Sealers annual reports also show the following reweighings and remeasurements made for their respective municipal departments:—2,560 loads of coal, 56 loads of hay, straw and grain, 161 loads of sand and gravel, 29 loads of trap rock, 46 loads of scrap iron, 60 loads of loam, 495 tank loads of fuel oil, 1,724 cords of wood, 30,540 gallons of gasoline, 52,416 gallons of fuel, 10 grocery orders and tested 53 scales, 13 gasoline meter systems and 19 liquid measures.

Local sealers inspected 14,037 clinical thermometers, 1,811 coal certificates, 1,356 ice scales, 379 junk scales, 5,397 pedlers' scales, 78,955 marking of food packages, 17,829 weight statements on bread, 4,066 ice cream cans, 3,995 wholesale milk cans, 13,513 milk jars, 22,185 lubricating-oil bottles, 5,826 paper cartons, 23,269 markings on fuel bags, 430 transient vendors, 15,726 miscellaneous items; and tested 435 berry baskets, 411 climax baskets, 1,770 paper or fibre cartons, 1,435 lubricating-oil bottles, 7,702 milk jars, 3,126 Massachusetts Standard boxes, 1,964 retests of gasoline and oil-measuring devices after sealing, and made 2,656 miscellaneous tests.

Prosecutions by Local Sealers

Nature of Offence	Number of Complaints	Convicted	Discharged	Pleaded Nolo	Filed	Defaulted	Fines Imposed	Sentences Suspended	Appealed
Giving insufficient weight	16	15	1	—	2	—	$208	—	3
Giving insufficient measure	4	4	—	—	—	—	25	—	—
Possession of false scale	1	1	—	—	—	—	10	—	—
Using unsealed scale	1	1	—	—	1	—	25	—	1
Failure to issue certificate in sale of coal	1	1	—	—	—	—	5	—	—
Conducting transient business without license	13	13	—	—	2	—	45	3	—
Peddling without license	45	44	—	1	8	—	675	2	3
Employing minor to peddle without license	3	3	—	—	1	—	45	—	1
Peddling on another's license	1	1	—	—	1	—	—	—	—
Totals	85	83	1	1	15	—	$1,038	5	8

Division of Standards
Financial Statement

Receipts

1,114 State (hawkers' and pedlers') license fees	$ 55,700.00
2,462 County (hawkers' and pedlers') license fees	21,640.00
532 City (hawkers' and pedlers') license fees	13,811.00
743 Town (hawkers' and pedlers') license fees	9,203.00
355 Transient Vendors' license fees	8,875.00
1,158 Transfer fees	1,158.00
Total receipts from license fees	$110,387.00
Fees received for licenses not issued	53.00
Fees received for testing clinical thermometers	234.50
Received for pedlers' plates and badges	5,221.00
Total Receipts	$115,895.50
Court fines for violations of hawkers' and pedlers laws	542.50
Witness fees	23.80
Total	$116,461.80

Payments

To State Treasurer:		
1,114 State license fees	$55,700.00	
2,462 County license fees	2,462.00	
532 City license fees	532.00	
743 Town license fees	743.00	
355 Transient Vendors' license fees	8,875.00	
1,158 Transfer fees	1,158.00	
Fees received for licenses not issued	53.00	
Fees received for testing clinical thermometers	234.50	
Pedlers' plate and badge money	5,221.00	
Total payments to State Treasurer		$ 74,978.50
To County Treasurers	$19,178.00	
To City Treasurers	13,279.00	
To Town Treasurers	8,460.00	
Total paid to county, city and town treasurers		$ 40,917.00
Total Payments		$115,895.50
Total paid direct to state treasurer for court fines		542.50
Total paid direct to state treasurer for witness fees		23.80
		$116,461.80

Summary

Appropriation. personal services	$33,400.00	
Expended	32,714.29	
Unexpended balance		$ 685.71
Appropriation, general expenses	$11,306.48	
Commonwealth reduction	260.15	
	$11,046.33	
Expended	9,425.97	
Unexpended balance		$ 1,620.36
		$2,306.07
Total income to the commonwealth from licenses, etc.		$ 74,978.50
Total expenditures		42,140.26
Excess of income over expenditures		$ 32,838.24

Financial Statement Verified.
Approved: Geo. E. Murphy, *Comptroller.*

REPORT OF THE DIVISION ON THE NECESSARIES OF LIFE

JOHN P. McBRIDE, *Director*

AUTHORIZATION

Sections of chapter 410 of the acts of 1930, as amended by chapter 362 of the acts of 1933 are published herewith:

SECTION 9E:—The division shall study and investigate the circumstances affecting the prices of fuel, gasoline and refined petroleum products and other commodities which are necessaries of life. It may inquire into all matters relating to the production, transportation, distribution and sale of the said commodities, and into all facts and circumstances relating to the cost of production, wholesale and retail prices and the method pursued in the conduct of the business of any persons, firms, or corporations engaged in the production, transportation or sale of the said commodities, or of any business which relates to or affects the same. It shall also study and investigate the circumstances affecting the charges for rent of property used for living quarters and in such investigation may inquire into all matters relating to charges for rent.

SECTION 9F:—The division shall have authority to give hearings, to administer oaths, to require the attendance and testimony of witnesses and the production of books and documents and other papers, and to employ counsel. Witness summonses may be issued by the director, or by any assistant by him designated, and shall be served in the same manner as summonses for witnesses in criminal cases issued on behalf of the commonwealth, and all provisions of law relative to summons issued in such cases shall apply to summonses issued hereunder, so far as they are applicable. Any justice of the supreme judicial court or of the superior court may, upon application of the director, compel the attendance of witnesses and the giving of testimony before the division in the same manner and to the same extent as before said courts.

SECTION 9G:—The division shall investigate all complaints made to it and may publish its findings. It shall keep in touch with the work of federal and municipal and other agencies dealing with the necessaries of life, and give them such assistance as it deems advisable; and may invoke the aid of said agencies and of civic and other organizations.

By virtue of the provisions of chapter 261, acts of 1939, the division organization within the department of labor and industries, as authorized by chapter 23, of the General Laws, section 4, was amended by reducing the number of directors of divisions from six to five, and placing the director of standards in charge of the division on the necessaries of life, to be known under the title of director of standards and necessaries of life. This chapter also repealed section 9H of said chapter 23 and substituted in lieu thereof the following:

SECTION 9H:—Whenever the governor shall determine that an emergency exists in respect to food or fuel, or any other common necessary of life, including the providing of shelter, or any two or more such necessaries of life, he may, with the approval of the council, by a writing signed by him, designate the adjutant general, the commissioner of labor and industries and the commissioner of public safety to act as an emergency commission, and thereupon the commission shall have, with respect to the necessary or necessaries of life as to which the emergency exists, all the powers and authority granted by the Commonwealth Defense Act of nineteen hundred and seventeen, being chapter three hundred and forty-two of the General Acts of nineteen hundred and seventeen, to persons designated or appointed by the governor under section twelve of said chapter three hundred and forty-two; and the governor may revoke such written authority at any time. During such an emergency, the governor, with the approval of the council, may make and promulgate rules and regulations, effective forthwith, for the carrying out of the purposes of

this section and for the performance by the commonwealth and the cities and towns thereof of any function, affecting food or fuel or any other common necessary of life, including the providing of shelter, authorized under Article XLVII of the amendments to the constitution. Violation of any such rule or regulation shall be punished by a fine of not more than five hundred dollars or by imprisonment for not more than six months, or by both. The provisions of said chapter three hundred and forty-two are hereby made operative to such extent as the provisions of this section may from time to time require.

It will be noted that this section sets up a separate board to act as an emergency commission in the event that it is determined that an emergency exists in respect to food or fuel or any other common necessary of life. Heretofore, the law authorized the Governor to designate the director of the division on the necessaries of life to act as emergency food or fuel administrator when such emergency was declared.

Chapter 459.—An Act further regulating the advertising and sale of motor fuel at retail.

Whereas, The deferred operation of this act would tend to defeat its purpose, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Section 1. Chapter ninety-four of the General Laws is hereby amended by striking out section two hundred and ninety-five A, inserted by chapter two hundred and twenty-eight of the acts of nineteen hundred and thirty-three, section two hundred and ninety-five B, inserted by chapter four hundred and eleven of the acts of nineteen hundred and thirty-eight, and section two hundred and ninety-five C, as amended by chapter two hundred and eighteen of the acts of the current year, and inserting in place thereof the fifteen following new sections:—*Section 295A.* When used in sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive:—

(1) The term "retail dealer" shall mean any person operating a service station, filling station, store, garage or other place of business for the retail sale of motor fuel or the sale of or dispensing of motor fuel for delivery into the service tank or tanks of any motor vehicle which is propelled by an internal combustion motor other than such a motor vehicle belonging to the person owning or operating said place of business.

(2) The term "motor fuel" shall mean (*a*) a light distillate of petroleum or allied substance with suitable volatility and other characteristics to be used as a fuel for operating internal combustion engines, whether or not it is mixed with other materials, or (*b*) any other product or liquid when sold for use as a fuel in any type of internal combustion engine furnishing power to operate a motor vehicle.

(3) The word "department" shall mean the department of labor and industries.

(4) The word "division" shall mean the division on the necessaries of life of the department of labor and industries.

(5) The word "director" shall mean the director of standards and necessaries of life.

Section 295B. No retail dealer shall engage in the business of selling motor fuel at retail without first procuring from the division a license for each station, store, garage or other establishment at which his said business is to be conducted. Licenses issued under this section shall be issued upon written application to the division, shall be issued only to persons who own the business to be licensed and who are the owners or lessees of the premises on which the business is to be conducted, shall be effective from the date of their issuance until the first day of January of the ensuing year, and shall be renewed annually. A license fee of five dollars shall be paid for the issuance of every such license and every renewal thereof.

Each licensee shall conspicuously display his license at the station, store, garage or other establishment to which it pertains. The requirements of this section with respect to licenses are hereby declared to be in addition to, and not in substitution for, license requirements contained in any other statute, ordinance, by-law, rule or regulation.

The expenses incurred by the division in the administration and enforcement of sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, in any fiscal year shall not be in excess of the receipts from license fees under said sections paid into the state treasury by the division during such fiscal year.

The division shall forthwith notify the commissioner of corporations and taxation in writing of all licenses issued, renewed, transferred, modified, cancelled or suspended by it.

Section 295C. Every retail dealer in motor fuel shall publicly display and maintain on each pump or other dispensing device from which motor fuel is sold by him, at least one sign and not more than two signs stating the price per gallon of the motor fuel sold by him from such pump or device. Said sign or signs shall be of a size not larger than eight inches by ten inches. The price shown on each of such signs shall include all taxes imposed with respect to the manufacture or sale of the motor fuel sold at such pump or device, and every such sign shall either contain a statement of the taxes included in said price, or, without specifying the amount thereof, shall state that such taxes are included in said price. All figures, including fractions, upon said signs, other than figures and fractions used in any price computing mechanism constituting a part of any such pump or dispensing device, shall be of the same size.

No signs stating or relating to the price of motor fuel, and no signs designed or calculated to cause the public to believe that they state or relate to the price of motor fuel, other than the signs referred to in the preceding paragraph and required to be displayed upon pumps and other dispensing devices, shall be posted or displayed on or about the premises where motor fuel is sold at retail, and within view of any public highway or reservation.

Section 295D. Any advertisement of motor fuel by a retail dealer which states, refers to or relates to the price of motor fuel shall state the per gallon price thereof, which price shall include all taxes so stated, referred to or related to, and there shall be included in such advertising matter a statement that such per gallon price includes such taxes or a statement of the amount of such taxes which are included in the stated per gallon price.

Section 295E. The price posted on any pump or other dispensing device from which motor fuel is sold, as required by section two hundred and ninety-five C, shall remain posted thereon and continue in effect thereat for a period of not less than twenty-four consecutive hours. No retail dealer shall sell motor fuel at any price other than the price so posted at the time of the sale. No premiums, rebates, allowances, concessions, prizes or other benefits shall be given directly or indirectly by any retail dealer so as to permit any purchaser to obtain motor fuel from such retail dealer at a net price lower than the posted price applicable at the time of the sale. In no transaction in which a retail dealer may fix or set a single price or charge for the sale of a quantity of motor fuel, together with some other commodity or service, shall such single price or charge be less than the aggregate of the charge, in accordance with the posted price, for the motor fuel involved in the transaction, plus the charge for such other commodity or service when the same is sold or rendered separately, rather than in combination with the sale of motor fuel.

Section 295F. All above-ground equipment for storing or dispensing motor fuel or lubricating oil operated by a retail dealer shall bear in a conspicuous place the brand name or trade-mark, and the name of the manufacturer, of the product stored therein or sold or dispensed therefrom. If the motor fuel or lubricating oil stored in or sold or dispensed from above-ground equipment

by a retail dealer has no brand name or trade-mark, such container or dispensing equipment shall have conspicuously displayed thereon the name of the manufacturer and the words "No Brand."

Section 295G. No person shall sell or offer to sell as gasoline any motor fuel or other substance which does not completely distill without pressure at a temperature not exceeding four hundred and thirty-seven degrees Fahrenheit, by methods of testing in general use in the petroleum refining industry. No retail dealer shall adulterate or permit the adulteration of any motor fuel or lubricating oil offered for sale or sold under a brand name or trade-mark or distinguishing mark of the manufacturer or distributor of said products, or substitute or permit the substitution of any other motor fuel or lubricating oil therefor. No retail dealer shall sell or dispense, or offer to sell or dispense, from any pump, tank or other dispensing device or container any motor fuel or lubricating oil other than that indicated by the name, trade name, trade-mark, symbol, sign or other distinguishing mark of the manufacturer or distributor of said product if any, appearing on said pump, tank or other dispensing device or container.

Section 295H. The division shall administer and enforce sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive. For said purpose, the department, subject to appropriation, may appoint to the division such additional investigators, inspectors, analysts, clerks and other assistants as it may deem necessary.

Section 295I. The division may adopt, amend, alter or repeal, and shall enforce, all such reasonable orders, rules and regulations as may be necessary or suitable for the administration and enforcement of said sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, and the division may, in such administration and enforcement, at any time cause to be made by its agents or representatives an audit, examination or investigation of the books, records, papers, vouchers, accounts and documents of any retail dealer, who shall make them available at any time upon oral or written demand to the division or any of its duly authorized agents or representatives.

Section 295J. Every retail dealer shall keep such records as may be prescribed by the orders, rules or regulations adopted by the division under section two hundred and ninety-five I, and all such records shall be safely preserved by such retail dealer for a period of one year, and shall be offered for inspection at any time upon oral or written demand by the division or any of its duly authorized agents or representatives.

Section 295K. Whoever, himself or by his agent or servant, violates any provision of sections two hundred and ninety-five A to two hundred and ninety-five J, inclusive, except section two hundred and ninety-five G, shall be punished by a fine of not less than fifty nor more than five hundred dollars. Whoever, himself or by his agent or servant, violates any provision of section two hundred and ninety-five G shall be punished by a fine of not more than five hundred dollars or by imprisonment for not more than one year. Upon the second conviction of any licensee of any such violation, whether by himself or by his agent or servant, the division may suspend the right of such licensee to engage in the business of selling motor fuel at retail for a period not exceeding three months, and upon the third or subsequent conviction of any licensee of any such violation, whether by himself or by his agent or servant, the division may suspend such right for a period not exceeding one year.

Section 295L. The superior court shall have jurisdiction in equity to enjoin the habitual, continued or repeated violation of any provision of sections two hundred and ninety-five A to two hundred and ninety-five J, inclusive, by any retail dealer. Petitions for such relief may be filed by any person injured or damaged by such violation.

Section 295M. Whenever the application of any provision of any other law of this commonwealth conflicts with the application of any provision of sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, said sections shall prevail.

Section 295N. If any provision of said sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, or the application of such provision to any person or circumstance, shall be held invalid, the remainder of said sections, or the application of such provision to any person or circumstance other than that as to which it is held invalid, shall not be affected thereby.

Section 295O. Sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, shall be known and may be cited as the "Motor Fuel Sales Act."

Section 2. Section nine G of chapter twenty-three of the General Laws, as appearing in the Tercentenary Edition, is hereby amended by adding at the end the following new sentence:—It shall administer and enforce sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, of chapter ninety-four,—so as to read as follows:—*Section 9G.* The division shall investigate all complaints made to it, and may publish its findings. It shall keep in touch with the work of federal and municipal and other agencies dealing with the necessaries of life, and give them such assistance as it deems advisable; and may invoke the aid of said agencies and of civic and other organizations. It shall administer and enforce sections two hundred and ninety-five A to two hundred and ninety-five O, inclusive, of chapter ninety-four.

Section 3. Retail dealers, as defined in section one of this act, engaged in the business of selling motor fuel, as so defined, at retail on the effective date of this act may continue such business for a period not exceeding thirty days after said effective date without being licensed as required by section two hundred and ninety-five B of chapter ninety-four of the General Laws, inserted therein by section one of this act. (*Approved August 11, 1939.*)

This legislation was sponsored by the Retail Gasoline Dealers Association for the purpose of stabilizing the retail gasoline dispensing industry, and to provide an enforcement agency for existing provisions of law in relation to price posting, prohibition against adulteration and substitution of motor fuel and lubricating oil. The law imposes a licensing requirement for each station, store, garage or other establishment at which motor fuel is sold at retail. The license fee estblished is five dollars and the law further provides that additional investigators, analysts, clerks and other assistants may be appointed as may be deemed necessary, and the expenses incurred by the division in the administration and enforcement of this act shall not be in excess of the receipts from license fees during any fiscal year. By virtue of the authority as contained in section 295H of said chapter 459, the division's personnel was increased by the appointment of a supervising motor fuel sales investigator, six investigators of motor fuel sales, one chemist, one laboratory assistant, and two clerks.

Summary of Activities

The division is generally regarded as a clearing house for all sorts of complaints and troubles which arise throughout the year regarding prices. The duties and activities are so varied that almost every type of case in which our citizens feel they are aggrieved comes within our jurisdiction for investigation. Cases handled by the division include rent and housing disputes; cleansing and dyeing cases; automobile finance cases; misunderstanding between buyers and sellers; clothing, food, fuel and other complaints pertaining to the "necessaries of life". In addition to hearing, investigating and adjusting thousands of individual cases, special investigations were made.

Usual activities were continued by the division with regard to investigation of complaints relative to prices, stocks on hand, transportation, distribution, etc., of fuels. The survey of fuels used in home heating has been conducted with reports of coal and oil being obtained from distributors over six months' periods. This information places the division in a position to cope with any emergency in case of strikes or other interference with the regular distributing of heating fuels.

The cost of living index has been computed and distributed monthly. The index is issued to business, welfare, municipal organizations, libraries, schools, colleges, etc., in practically every state in the Union, as well as to governmental authorities which include national, state and city officials.

In January, 1939, operators of Boston trucking firms went on strike. At the request of Governor Saltonstall, this division was instructed to keep in close touch with the food situation throughout the state. It was found by investigators that some retailers had increased their prices of foodstuffs unduly but a warning that profiteering of any kind would not be tolerated and would be punished to the full extent of the law, eliminated this evil. Deliveries to hospitals were made through efforts of this division. Through intervention of the Governor, the strike was settled and the danger of privation for the public, food shortage and congestion of industrial supplies was over.

In April, employers and drivers of fuel and coal trucks were unable to reach an agreement and negotiations continued until April 29th. This situation reached a stage which appeared threatening to the health of many people because of lack of fuel, and conferences were held with the employers and employees at the direction of Governor Saltonstall, and an agreement was reached authorizing this division to sanction emergency situations so that delivery of fuel might be accomplished in cases involving probable impairment to health. Certain other exigencies developed, however, in relation to manufacturing establishments having under construction essential equipment for the naval and war departments and public utilities furnishing light, power and transportation to communities, which were included within the range of emergency situations. To properly fulfill this duty, our office was open seventeen hours a day so that our services would be available to the public at times most convenient to them.

By virtue of this arrangement, the following emergency permits were issued:

Private homes	1,007
Hospitals	148
Schools	170
Apartment houses	465
Convalescent homes	32
Manufacturing concerns	70
Public buildings	96
Hotels	66
Milk concerns	26
City welfare	4
Restaurants	13
Churches	38
Convents	3
Transportation companies	5
Office buildings	5
Food manufacturers	65
Bakeries	45
Laundries	27
Stores	1
Public utilities	28
Total	2,314

During the period of the above-mentioned difficulty, certain maritime workers went on strike and water shipments of gasoline and fuel oil ceased in a large measure. This situation offered a new threat to the health and comfort of our citizens as well as to industry and transportation, generally, and a survey was made of supplies of gasoline, kerosene and fuel oil in storage in the metropolitan Boston area, preparatory to plans which might have to be adopted to meet possible eventualities. It was ascertained that there was in storage 47,151,876

gallons of gasoline, and 45,975,986 gallons of kerosene and heating oils. This situation, however, terminated before reaching an acute stage effecting serious shortage.

In April, the bituminous coal miners went on strike and in anticipation of the probable effect of loss of source of supply for a protracted period, a survey was made to determine bituminous stocks on hand. This survey showed a net tonnage in storage of 157,992 tons, with normal demands for domestic use for the six months period commencing April 1st reaching 120,000 tons. This situation later cleared with settlement of the difficulties at the mines.

In September after the declaration of war in Europe prices on food stuffs commenced to advance, the index on this item in August being 114.5, the index in September was 122.4, showing an increase of 7.9%. Consumer indignation was immediately aroused and protests were registered with this division and with federal authorities. Several consumer groups were granted hearings on the subject by this division. The general situation eased off late in September and prices generally receded to the August levels, and in the case of meats, fish, eggs, coffee, sugar and canned vegetables went below August levels.

Householders were fearful of a repetition of previous conditions of shortage during the last World War and concentrated on the purchase of sugar beyond immediate needs. This seriously burdened production at the refineries and prices rose substantially. A survey was immediately made in relation to this commodity and it was found that the supply was ample for present and future normal demands and through the courtesy of the press and radio this information was readily disseminated to the public, thus allaying the fear of shortage and the public responded by confining purchases to normal needs with the result that the price of sugar gradually receded to its normal status in the competitive field.

Immediately upon enactment of the Motor Fuel Sales Law (Chapter 459) necessary regulations were drafted and a copy of the law and regulations with application for license was immediately mailed to all retail gasoline dealers in the commonwealth. On September 13th, an inspection force of six investigators and one supervising investigator was established and provisional appointments made pending the establishment of a civil service list.

On October 25, 1939, a testing laboratory was set up in the Public Works Building at 100 Nashua Street, Boston, for the purpose of testing gasoline and lubricating oils. In the few months of the enforcement activities 4,886 inspections were made at the various gasoline stations throughout the commonwealth, which showed the following violations:

Illegal price signs	2,705
Illegal advertising	33
Posted price change	1
Selling below posted price	88
Improperly branded equipment	1,566
Proper records not kept	964
Total Violations	5,357

At the close of the fiscal year, November 30, 1939, 7,821 licenses were issued to retail dealers in motor fuel amounting to $39,105, and 400 tests had been made of gasoline specimens submitted to the laboratory by the investigators from retail gasoline dispensing devices. In as much as this law was new, it was not our desire to immediately prosecute violations and a policy of education was adopted. However, it was necessary to bring before the courts eleven violations which had been repeated after proper warning and convictions were obtained in all of these cases.

Richard Olney, Director of the division, passed away on January 15, 1939. Mr. Olney had devoted much of his life to public service, coming to this division from the chairmanship of the parole board on July 1st, 1937. In his early life he had served as a member of the National House of Representatives and was interested in many civic organizations. He was a man who easily endeared himself to others by his fine qualities.

Trend of Living Costs

The division records prices largely from the viewpoint of the consumer, and for the purpose of recording the trend of retail prices, it collects, compiles and publishes what is called a "cost of living index".

This index is supplied upon request to industrial, business, and labor organizations, welfare societies, financial interests, schools and colleges, mercantile establishments, national, state and municipal government officials, and interested individuals.

The information relative to prices supplied in the compilation of this index enables the division to combat propaganda based on the incomplete and inaccurate information relative to living costs and market conditions which tend to discredit Massachusetts.

This index is widely used in the settlement of wage and salary disputes. In the arbitration of such disputes, due consideration should be given to a changed living standard, which cannot be considered in computing the index without destroying its comparative value.

During 1939, the combined index decreased from 139.1 in January to 136.5 in December. The low point of 136.1 was for the month of November. Comparable combined index numbers for 1938 and 1939 are given in the following table:

Combined Cost of Living Index—1913=100

	1938	*1939*		*1938*	*1939*
January	141.8	139.1	July	140.8	138.3
February	139.2	139.0	August	140.4	138.2
March	139.8	138.4	September	140.7	141.1
April	139.2	139.1	October	140.2	140.4
May	138.9	138.4	November	139.7	136.1
June	139.9	137.6	December	139.6	136.5

Expressed in dollars, these index numbers indicate that $139.10 was required in January, 1939, to purchase the same quantity of commodities that cost $141.10 in September, $136.50 in December, and $100.00 in 1913, the base year.

The foregoing table indicates that the trend of living costs fluctuated during the year.

Elements of the Budget

Food.—The index of combined food prices decreased about 10 1/8% during the year 1939, from 116.5 in January to 104.7 in December, the low point of the year.

The index for combined meats was 137.1 in January, 142.4 in May, and 115.0 in December, a decrease of about 16 1/10%. The high point of 149.5 was reached in September.

Food represents the largest single item of expense in the budget, and is allotted 37.6% of the total family expenditures for all items. The amount actually spent for food, however, depends upon the size of the family, the age and type of employment of the individual members.

Cold Storage.—The control and inspection of all foods held in cold storage in Massachusetts functions under the State Department of Public Health, which issued monthly statements in regard to the amount of food held in cold storage warehouses. Speculation and manipulation of supplies through the use

of these warehouses are, therefore, practically eliminated. Comparative stocks of food held in storage in December, 1938, and December, 1939, are given below:

Commodity	*1938*	*1939*
Beef	930,963 lbs.	507,305 lbs.
Pork	1,830,117 "	2,087,511 "
Lamb and mutton	171,663 "	119,198 "
Miscellaneous meats	1,161,325 "	1,004,920 "
Total poultry	6,400,905 "	6,175,839 "
Butter	1,552,159 "	3,304,671 "
Eggs (case)	318,480 doz.	83,910 doz.
Eggs (frozen)	2,451,488 "	1,514,676 "
Haddock fillets	3,812,259 lbs.	3,471,113 lbs.
Cod, haddock, pollock, hake	6,319,561 "	7,796,071 "
Mackerel	3,315,124 "	5,312,283 "
Whiting	6,500,578 "	6,500,578 "
Squid	584,450 "	1,285,488 "
Herring	370,166 "	323,483 "
Herring (cured)	1,023,182 "	635,587 "
Halibut	234,787 "	166,577 "
Other Miscellaneous	3,475,479 "	4,379,447 "

Meat.—The budget allowance for meat represents about one-third of the total for food; therefore, a substantial increase or decrease in meat prices greatly affects the family expenditure.

Comparative Table of Combined Meat Index

	1938	*1939*		*1938*	*1939*
January	135.8	137.1	July	150.9	139.2
February	126.5	139.6	August	147.4	139.6
March	128.5	139.8	September	147.4	149.5
April	134.8	142.0	October	145.4	143.0
May	137.1	142.4	November	143.3	120.1
June	139.5	139.3	December	138.6	115.0

The combined index for fresh beef was 147.3 in January and 122.6 in December, the low point of the year, a decrease of about 16 4/5%. The high point of 156.7 was reached in September.

Comparative Table of Combined Fresh Beef Index

	1938	*1939*		*1938*	*1939*
January	140.5	147.3	July	157.7	146.2
February	128.5	148.1	August	154.5	148.3
March	127.9	148.4	September	151.5	156.7
April	135.6	151.0	October	153.2	150.1
May	139.5	151.1	November	149.0	124.5
June	143.7	147.4	December	148.5	122.6

Clothing.—The clothing section of the budget represents 12.8% of the total expenditures divided about equally between the men's and women's sections. A general increase was noted in this index during the year from 148.9 in January to 152.1 in December, the high point of the year. The largest increases occurred in the prices of suits, the index for January being 158.3 and for December 162.3. With the exception of men's shirts and women's shoes all other items showed slight increases.

Clothing is a much more important item in the family budget of Massachusetts than in some other sections of the country, as the changeable and variable climate demands a large variety of articles of wearing apparel. They can be purchased, however, at a wide variation of prices, dependent upon the make-up of the garment. Articles made from the same or similar cloth, but tailored by mass production with make-up costs cut to a minimum, may be purchased at a wide difference in retail price. It is also noted that in the case of women's garments, many lower priced tailoring establishments have designers continually employed, whose sole job it is to visit higher priced shops for the purpose of copying the latest styles in garments. These designers are so expert at their trade that it is almost impossible to determine any style defects.

It is readily observed that standardization of the clothing section is almost impossible, and for this reason the sampling method, or prices of goods entering into the make-up of garments with the exception of certain staple items, is used in the compilation of this budget.

Fuel and Light.—The study and investigation of the circumstances affecting the supply and prices of various fuels is one of the duties of the division, and in this connection numerous data is collected, compiled and published at regular intervals. Other information is supplied to numerous organizations, governmental departments and individuals. Much of this information is used in connection with rate cases held by Interstate Commerce Commission and other official hearings and investigations.

The changeable and uncertain climate of Massachusetts makes fuel of some type one of the most important items of the budget, and high fuel prices necessarily affect all our citizens. It is, therefore, desirable that information be available relative to receipts, stocks, deliveries and prices of all fuels used for heating purposes in Massachusetts.

The division has so conducted these important surveys that in the past, during periods of suspension of mining operations, or other interference with normal movement of fuels, little, if any, price increases have occurred in direct contrast to changes in nearby states.

The relative importance of fuels used for home heating in Massachusetts, as shown by the annual survey made by this Division, indicates an increased consumption of oil and gas, while deliveries of anthracite coal and coke showed decreases. Comparative figures for the 1937-1938 and 1938-1939 coal years are given below:

Fuel	*1937-1938*	*1938-1939*
Anthracite (Domestic sizes)	2,483,000 net tons	2,320,000 net tons
(Buckwheat sizes)	192,000 " "	176,000 " "
Coke	919,000 " "	828,000 " "
Bituminous coal	823,000 " "	805,000 " "
Briquets	46,000 " "	39,000 " "
Other manufactured fuels	12,000 " "	12,000 " "
Oil	795,000,000 gallons	823,000,000 gallons
Gas installations, central heating plants	7,977	8,386
Gas (estimated)	3,269,266,000 cu. ft.	3,480,500,000 cu. ft.

Domestic anthracite deliveries for the first six months of the 1939-1940 coal year amounted to 937,501 net tons compared to 859,543 net tons for the same period of the 1938-1939 coal year.

Oil deliveries have continued to increase from year to year and today oil is one of the most popular fuels. Both oil and gas consumption increased over the previous year while all other fuel showed decreases.

A compilation of statistics relative to receipts, stocks, prices, deliveries, etc., is contained in the tables in the Appendix of this report.

Shelter.—The shelter index, which represents 21.8% of the total budget, increased during the year from 153.5 in January to 160.0 in December.

Complaints relative to vacate notices, refusal or neglect to supply services, poor condition of stoves and heating apparatus, and inability to collect rents were received by this division. In practically all cases an amicable agreement was reached. Many cases might have led to serious trouble or court action.

Sundries.—The sundries section of the budget is given a weighting of 22.8% of total expenditures. This list includes such items as ice, carfare, entertainment, medicine, insurance, church, tobacco, reading matter, house furnishings, organizations, candy, soft drinks, etc. No change was noted in this section during the year.

Sundries comprise goods and services, not elsewhere specified, that are felt to be neccessary for the operation of the home.

APPENDIX I.

Cost of Living Curve

Statistical Method and Tables of Proportion and Prices

The division and its predecessor the Special Commission on the Necessaries of Life have used in the computation of the Massachusetts cost of living index the same percentages for the major sections of the budget as those used by the National Industrial Conference Board, until July of 1931. These weights, together with others which applied to many individual items of the budget, were changed in 1931 after much study and investigation, and the division believes that the new allocation of weights represents the relative importance of items and groups to a greater degree of accuracy.

The present allocation of weights for the major budget are as follows:

Food	37.6
Clothing	12.8
Shelter	21.8
Fuel and light	5.0
Sundries	22.8

In computing an index of living costs, a list of representative articles in common use is first selected, and it is then necessary to assign importance to them in the total, in proportion to the extent to which they are commonly used. Food represents a much larger expenditure than ice or fuel; and in the list of foods a 20 per cent increase in the price of meats is much more important than a hundred per cent increase in the price of pepper or salt. The proportions assigned to the various commodities are called weights or weightings, and an index so constructed as to recognize the relative importance of different articles is called a "weighted index". The list of articles and weightings adopted by the division are given in detail in Tables 1 to 5, inclusive.

Having selected the list of commodities, some particular time must be chosen as a basis of comparison, and all prices at that time are called base prices, represented by 100 per cent in the scale. For the Massachusetts index, the calendar year of 1913 was selected as a base year because this gave a true, pre-war picture. Monthly quotations have been secured before and after the basic period, and each quotation is divided by the basic quotation to give the index number for the later month. Monthly quotations since 1910 have been used in the case of foods. Thus the basic, or 1913, quotations on flour was 91 cents per one-eighth barrel bag, and in November, 1939, the price was $.8817, which, divided by the base, gave the index number for flour as 96.6 in November, 1939. Each quotation is in turn divided by the base price, and a table of index numbers, or percentages, is the result. A table is made for each commodity, and then the index numbers are combined using the weightings to which reference has been made. A different selection of commodities and a different selection of weightings will cause the indices to be quite different. Each is a true presentation of certain facts; no index can present all of the facts. In its studies the division has endeavored to choose not only the most necessary commodities, but also to combine them in proper proportions, so that a fair presentation is made of conditions in Massachusetts.

Some idea of the magnitude of work involved in making an index may be had when it is realized that over 400,000 computations were made in constructing the original index of living costs.

Food Index

The index of foods, which has a weighting of 37.6 in the total, is a composite based upon the selling prices of thirty-seven articles of food. These articles of food are assigned weights in accordance with their relative importance. The allocation of these weights follow:

Table 1.—Allocation of Commodity Weights in the Food Index

Fresh beef	1,605	Tea	187
Salt beef	242	Coffee	287
Fresh hog products	379	Sugar	518
Salt hog products	361	Molasses	45
Other meat	363	Flour and meal	480
Poultry	301	Bread	526
Fish	298	Rice	57
Eggs	570	Potatoes	457
Milk	788	Other vegetables	476
Butter	881	Fruit	253
Cheese	75	Vinegar, pickles, condiments	80
Lard	241	Other food	530
Total			10,000

Table 2.—List of Commodities in Combinations Included in the Food Index

Fresh beef: Steak, sirloin steak, and rump steak. Roasts and stews: Chuck Roast, round beef. (The above cuts are given equal weight in the item of fresh beef.)

Salt beef: Fancy brisket.

Fresh hog products: Fresh pork loins.

Salt hog products: Ham, bacon, salt pork. (The above cuts are given equal weight in the item of salt hog products.)

Other meat: Lamb. Veal. (Lamb is given a weighting of 2 and veal 1 in the item of other meat.)

Poultry: Fowl.

Fish: Salt cod. Fresh haddock. (The above are given equal weight in the item of fish.

Flour and meal: Wheat flour. Corn meal. (Flour is given a weighting of 3 and corn meal 1 in the item of flour and meal.)

Other vegetables: Onions. Canned tomatoes. Canned peas. Canned corn. (The above are given equal weights in the item of other vegetables.)

Fruit: Evaporated apples. Prunes. (The above are given equal weights in the item of fruit.)

Other food: Dried beans. Oatmeal. (Dried beans are given a weighting of 2 and oatmeal 1 in the item of other food.)

Shelter Index

The index of shelter, which has a weighting of 21.8, is based on rentals charged for many houses in many parts of the commonwealth. These range in 1910 from $12 to $32 per month, and in November, 1939, from $20 to $60 per month. The list includes single, two-family, and three-family houses, and middle-priced apartments, heated and unheated, but does not include mercantile or office buildings.

Clothing Index

The index of clothing, which has a weighting of 12.8 in the total budget, is derived from quotations on the following articles. The weighting of the various articles of clothing, as combined in the clothing index, is also shown.

The standard blue serge has been used as the basis for quotations for men's outer garments. Overcoats have varied in weight and style, and it has been almost impossible to find a standard for quotation. Overcoating fabric prices of uniform weight have, however, advanced in the same ratio as blue serge prices and, therefore, the index of the serge suit cost, which is almost identical with the index serge fabric costs, has been used as a basis for the suit, overcoat and trousers item. For night garments, the composite of cotton fabrics has been used, as all cheaper cotton fabrics have advanced in nearly the same ratio, and the quotation will therefore cover night garments made of either canton

or domet flannels or long cloth. In the list of women's clothes the same index based upon blue serge has been used for the topcoat, suit and street dress. The items of night gowns, slips, kimonos, waists, house dresses and aprons are combined, and the average index of cotton piece goods has been used.

Table 3.—Allocation of Weightings in the Clothing Index

Men's

Overcoats, suits, trousers	48	Shirts	7
Shoes	9	Collars	1
Hats	6	Underwear	3
Gloves	2	Night garments	3
Socks	5		
Total	84		

Women's

Suits, topcoats, street dresses	42	Gloves	2
Underwear	4	Hosiery	7
Waists, kimono, house dresses, aprons, nightgown, slips	10	Corsets	2
		Hats	5
Shoes	8		
Total	50		

Fuel, Heat and Light Index

The index for fuel, heat and light, which has a weighting of 5.0, is based upon selling prices of coal and kerosene throughout the State, and upon the rates for gas and electricity in the following cities: Boston, Springfield, Worcester, Lawrence, Lowell, New Bedford and Fall River.

The weightings assigned to these different commodities are based upon a study of family expenditures, and are guaged to cover conditions in wage-earning families throughout the State. The weightings are as follows:

Table 4.—Allocation of Weights in the Fuel Index

Coal	61	Gas	20
Kerosene	4	Electricity	15
Total	100		

Sundries Index

For sundries, substantially the same list of commodities that is quoted in the report of the National Industrial Conference Board (Research Report No.22) has been used with the addition of ice. The list, together with weightings assigned to the different commodities, is as follows:

Table 5.—Allocation of Weighting in the Sundries Index

Ice	847	Tobacco, etc.	589
Carfare	1,056	Reading	934
Entertainment	902	House furnishings	1,834
Medicine	1,015	Organizations	879
Insurance	1,111	Candies, soft drinks, etc	322
Church	511		
Total	10,000		

It should be noted that no provision is made in the above classification for savings other than insurance.

Table 6.—Cost of Living Index Numbers by Elements.

Elements	January	February	March	April	May	June	July	August	September	October	November	December
1919												
Food	180.1	174.2	174.1	176.6	179.7	181.0	182.2	187.4	182.0	184.7	188.9	189.1
Clothing	221.5	223.5	223.8	235.3	235.8	235.8	235.8	237.2	240.9	256.3	271.6	272.3
Shelter	118.4	118.4	118.4	115.5	115.5	115.5	115.5	115.5	115.5	129.6	129.6	129.6
Fuel and light	143.1	135.1	135.1	135.7	140.0	144.3	145.8	150.1	150.1	150.7	152.9	153.5
Sundries	155.0	155.0	155.0	156.0	158.0	160.0	165.0	163.0	167.0	172.0	175.0	175.0
Combined	167.5	164.7	164.7	167.0	169.1	170.3	171.5	174.6	173.1	179.9	184.5	184.7
1920												
Food	200.9	195.5	198.9	198.2	207.9	207.9	216.9	205.1	202.5	194.7	187.2	179.6
Clothing	286.2	291.3	299.8	305.5	302.0	288.4	280.9	282.9	285.9	268.9	258.3	226.0
Shelter	131.0	131.0	131.0	133.8	134.9	139.4	139.4	142.4	147.8	147.8	150.6	151.7
Fuel and light	154.2	160.7	161.6	170.8	171.1	171.7	172.1	175.0	188.5	189.2	190.0	189.9
Sundries	175.9	175.9	175.9	183.0	183.0	185.0	185.0	185.0	188.0	190.0	192.0	192.0
Combined	192.0	190.8	193.4	196.3	200.3	199.7	202.6	198.5	200.1	194.9	191.3	183.9
1921												
Food	171.5	158.6	145.1	142.1	135.3	133.5	139.5	142.0	139.9	138.7	137.2	139.4
Clothing	219.9	214.4	208.2	206.5	201.6	197.1	191.8	187.1	186.7	186.2	187.6	186.1
Shelter	151.7	151.7	153.2	156.3	159.4	159.4	159.4	159.4	161.0	161.0	161.0	161.0
Fuel and light	188.8	188.3	187.5	177.4	176.8	176.1	175.9	175.9	175.4	180.9	180.0	180.5
Sundries	192.0	190.0	190.0	188.0	188.0	185.0	183.0	183.0	180.0	180.0	180.0	178.0
Combined	179.5	172.9	166.4	164.5	161.4	159.4	160.8	161.4	160.0	159.7	159.2	159.6
1922												
Food	136.1	135.6	133.1	135.4	134.0	134.1	137.2	136.3	136.3	136.3	139.9	139.8
Clothing	180.1	179.2	176.9	176.5	176.1	176.5	176.1	174.9	177.6	178.4	179.1	162.5
Shelter	162.5	162.5	162.5	162.5	162.5	162.5	162.0	162.0	162.0	162.0	162.5	179.4
Fuel and light	174.9	174.9	173.7	172.8	172.8	172.7	172.0	172.9	177.0	182.6	184.5	184.8
Sundries	178.0	177.0	177.0	174.0	174.0	174.0	174.0	172.0	169.7	169.7	169.7	168.8
Combined	157.3	156.8	155.3	155.6	154.9	155.0	156.2	155.3	155.4	156.6	157.7	157.5

Table 6.—Cost of Living Index Numbers by Elements—Continued

1923

Elements	January	February	March	April	May	June	July	August	September	October	November	December
Food	139.3	141.3	138.8	139.3	141.0	140.0	143.4	142.0	143.5	144.9	142.0	144.1
Clothing	178.0	182.2	182.8	184.0	183.2	184.1	182.1	182.2	183.4	185.9	187.0	186.1
Shelter	162.5	162.5	164.5	166.0	166.5	167.0	167.0	167.0	167.0	167.5	167.5	167.5
Fuel and light	184.8	184.2	178.2	178.6	177.5	177.4	178.2	177.0	177.7	181.6	182.1	181.7
Sundries	168.8	168.8	168.8	170.5	170.5	170.5	170.5	170.5	170.5	170.5	170.5	170.5
Combined	157.1	158.5	157.5	158.5	159.1	158.9	160.1	159.5	160.3	161.6	160.5	161.3

1924

Elements	January	February	March	April	May	June	July	August	September	October	November	December
Food	141.0	139.9	139.0	136.1	136.4	137.1	137.5	138.5	142.4	142.1	141.5	143.0
Clothing	186.8	187.4	186.0	184.9	183.3	181.6	181.4	178.8	180.6	180.1	178.4	181.2
Shelter	168.0	168.0	168.0	168.0	168.0	168.0	168.0	172.0	172.0	172.0	172.0	172.0
Fuel and light	178.4	178.6	178.8	177.1	177.0	177.2	177.5	177.4	179.6	179.3	179.5	179.5
Sundries	171.4	171.4	171.4	171.4	171.4	171.4	171.4	170.5	170.5	170.5	170.5	172.2
Combined	160.1	159.7	159.2	157.7	157.6	157.7	157.8	158.4	160.5	160.3	159.8	161.2

1925

Elements	January	February	March	April	May	June	July	August	September	October	November	December
Food	144.7	142.8	144.4	143.4	143.7	146.8	147.9	150.3	150.3	153.1	154.1	155.6
Clothing	177.9	177.6	181.6	181.2	180.8	182.3	182.1	180.7	181.1	181.5	182.1	186.6
Shelter	172.0	172.0	172.0	172.0	172.0	172.0	172.0	172.0	170.0	170.0	170.0	170.0
Fuel and light	179.9	180.0	175.6	175.7	175.7	176.6	178.5	181.2	181.2	181.2	186.4	197.4
Sundries	172.2	172.2	172.2	172.2	172.2	172.2	172.2	172.2	171.4	171.4	171.4	172.2
Combined	161.5	160.6	161.6	161.1	161.2	162.8	163.4	164.4	163.9	165.1	165.9	168.0

1926

Elements	January	February	March	April	May	June	July	August	September	October	November	December
Food	151.8	153.9	149.2	151.9	148.0	148.3	147.7	145.4	146.8	147.3	147.4	147.9
Clothing	184.5	181.7	182.3	179.2	180.3	181.2	178.6	178.7	177.0	177.7	177.5	177.5
Shelter	170.0	170.0	170.0	170.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0
Fuel and light	214.6	198.0	183.3	181.4	181.9	182.0	183.3	184.4	184.4	185.2	185.7	185.5
Sundries	172.2	172.2	172.2	172.2	170.5	170.5	169.7	169.7	169.7	170.5	171.4	171.4
Combined	167.0	166.6	163.9	164.5	162.3	162.5	161.9	160.9	161.3	161.8	162.1	162.3

1927

Food	145.9	143.7	142.1	143.4	145.7	145.5	142.8	142.2	142.6	142.1	144.6	145.0
Clothing	176.1	176.3	175.1	175.0	173.9	173.3	170.2	171.6	172.5	172.1	172.8	172.8
Shelter	168.0	168.0	166.0	166.0	166.0	166.0	166.0	165.0	165.0	165.0	165.0	165.0
Fuel and light	185.4	185.3	184.6	181.6	178.5	178.4	179.0	179.3	181.5	181.5	181.5	181.4
Sundries	171.4	171.4	171.4	170.5	170.5	170.5	170.5	170.5	169.7	169.7	170.5	170.5
Combined	161.2	160.3	159.0	159.2	159.9	159.7	158.6	158.0	158.2	158.0	159.3	159.5

1928

Food	145.4	144.2	142.2	144.6	146.1	144.6	148.6	149.3	152.7	150.0	149.0	147.6
Clothing	172.6	172.7	172.6	171.7	173.8	172.1	172.5	170.9	171.5	169.3	171.5	172.8
Shelter	165.0	165.0	165.0	165.0	165.0	165.0	165.0	163.0	163.0	163.0	163.0	163.0
Fuel and light	181.4	181.4	181.2	175.4	175.4	175.4	175.4	175.5	177.9	177.9	179.7	179.6
Sundries	170.5	169.7	169.7	168.8	170.0	170.0	170.0	170.0	170.0	170.0	170.0	170.0
Combined	159.6	158.9	158.0	158.4	159.6	158.7	160.5	160.3	161.9	160.5	160.5	160.0

1929

Food	148.5	146.5	147.6	147.7	149.1	148.1	151.8	154.7	153.0	152.1	149.3	148.9
Clothing	173.3	170.1	174.1	173.6	173.6	173.6	172.2	173.6	173.2	173.5	173.6	174.0
Shelter	163.0	163.0	163.0	163.0	163.0	163.0	163.0	163.0	163.0	163.0	163.0	163.0
Fuel and light	179.5	179.6	179.7	177.9	174.2	174.2	176.4	176.3	178.9	179.0	179.1	179.3
Sundries	170.0	169.2	169.2	168.9	168.9	167.9	167.7	167.7	167.7	168.4	169.2	169.2
Combined	160.5	159.0	160.0	159.8	160.2	159.6	161.1	162.5	161.9	161.7	160.7	160.6

1930

Food	146.4	145.8	141.9	142.1	141.7	139.3	137.6	136.6	137.2	137.0	132.9	130.8
Clothing	173.6	173.6	173.5	173.3	173.1	173.0	172.4	172.7	171.6	168.8	165.5	164.0
Shelter	163.0	163.0	163.0	163.0	163.0	161.0	161.0	161.0	161.0	161.0	161.0	160.5
Fuel and light	179.4	179.4	178.3	178.1	170.7	170.7	172.1	174.3	175.0	175.8	175.4	175.5
Sundries	169.2	168.1	167.2	167.2	167.0	166.9	166.5	165.7	165.7	165.3	165.6	165.0
Combined	159.4	158.9	157.0	157.1	156.4	155.0	154.2	153.7	153.9	153.4	151.2	149.9

Table 6.—Cost of Living Index Numbers by Elements—Continued

1931

Elements	January	February	March	April	May	June	July	August	September	October	November	December
Food	128.5	121.3	120.9	118.9	115.9	115.0	115.7	117.0	117.4	115.1	111.5	107.8
Clothing	162.4	157.4	156.6	154.5	151.0	149.2	149.1	148.6	148.4	148.0	145.8	145.0
Shelter	160.5	156.0	156.0	156.0	155.0	155.0	155.0	153.0	153.0	151.0	151.0	151.0
Fuel and light	175.5	175.4	175.8	166.0	163.1	163.1	164.9	165.5	167.5	168.3	168.7	168.1
Sundries	164.2	163.8	162.2	161.3	158.8	157.5	157.5	157.0	157.0	156.6	156.0	154.6
Combined	148.6	143.9	143.3	141.5	141.1	140.2	140.5	140.4	140.7	139.3	137.5	135.7

1932

Food	105.6	102.2	100.3	98.6	96.2	93.0	98.8	99.3	99.2	97.4	95.8	94.9
Clothing	138.8	135.9	135.2	132.2	128.8	124.7	125.4	123.9	122.0	123.9	120.4	121.7
Shelter	151.0	150.0	150.0	150.0	150.0	150.0	150.0	150.0	135.0	135.0	135.0	135.0
Fuel and light	168.0	164.0	164.0	155.8	154.2	153.5	154.9	154.9	158.9	159.0	157.3	156.8
Sundries	154.6	152.9	152.9	152.9	151.2	151.2	152.9	152.9	152.9	152.9	150.1	150.1
Combined	134.0	131.6	130.8	129.3	127.5	125.8	128.5	128.5	125.2	124.7	122.7	122.8

1933

Food	91.6	87.9	86.5	86.6	89.7	92.1	100.0	102.1	103.8	104.2	103.2	101.6
Clothing	121.2	121.5	119.1	120.7	121.7	124.6	126.6	130.8	135.7	140.4	142.6	143.4
Shelter	135.0	135.0	133.0	133.0	133.0	133.0	133.0	133.0	133.0	135.0	135.0	135.0
Fuel and light	157.1	157.0	156.9	156.2	150.4	148.8	150.1	151.1	154.6	155.3	155.4	155.1
Sundries	148.8	148.8	148.8	148.8	148.8	149.0	149.0	149.4	150.4	151.1	151.1	151.1
Combined	121.2	119.8	118.5	118.9	119.7	121.0	124.3	125.7	127.4	128.8	128.7	128.2

1934

Food	100.2	103.9	105.4	105.2	106.7	107.0	110.1	112.1	114.1	113.8	112.6	110.9
Clothing	145.2	145.9	148.0	146.4	147.2	147.7	146.5	145.9	147.8	149.0	149.9	148.9
Shelter	138.0	138.0	138.0	138.0	138.0	138.0	138.0	138.0	139.0	139.0	139.0	139.0
Fuel and light	155.1	155.8	155.0	154.5	150.3	150.8	152.2	153.7	156.6	156.9	156.4	156.7
Sundries	152.2	152.2	152.2	152.2	153.9	153.9	153.9	153.6	153.6	153.6	153.6	153.5
Combined	128.8	130.3	131.1	130.8	131.6	131.9	132.9	133.6	135.0	135.0	134.7	133.9

1935

Food	116.0	120.9	122.7	124.2	123.6	121.6	121.8	124.5	126.3	124.2	125.3	123.9
Clothing	148.7	146.9	146.4	147.5	148.1	147.6	149.9	146.4	147.9	148.2	146.9	146.5
Shelter	139.0	139.0	139.0	139.0	139.0	139.0	139.0	142.0	142.0	142.0	142.0	142.0
Fuel and light	156.5	156.6	156.8	142.9	141.9	142.2	142.9	144.2	146.5	150.6	150.5	150.4
Sundries	153.5	153.5	153.3	153.3	153.3	153.3	153.3	153.3	153.3	153.3	153.3	152.7
Combined	135.8	137.4	138.0	138.0	137.8	137.0	137.4	138.7	139.7	139.1	139.3	138.6

1936

Food	120.0	120.6	119.1	118.2	120.4	120.6	122.3	120.9	121.4	119.3	120.6	122.3
Clothing	145.5	147.5	146.9	146.1	144.5	144.9	145.6	145.3	145.4	142.8	144.6	145.1
Shelter	142.0	142.0	142.0	142.0	145.0	145.0	145.0	145.0	145.0	145.0	145.0	150.0
Fuel and light	150.6	150.6	151.0	148.5	144.9	145.7	146.1	147.3	149.1	149.9	150.2	150.3
Sundries	152.7	152.7	152.7	152.7	152.7	152.7	152.7	152.7	152.2	152.2	152.2	151.8
Combined	137.0	137.5	136.9	136.3	137.4	137.6	138.4	137.8	138.0	136.9	137.7	139.4

1937

Food	124.7	125.1	127.4	125.4	126.8	127.5	129.0	133.5	134.9	131.7	127.8	122.5
Clothing	146.4	148.3	147.6	147.1	147.5	149.0	151.9	153.5	155.0	154.2	156.5	157.3
Shelter	150.0	150.0	150.0	150.0	150.0	154.0	154.0	154.0	154.0	154.0	154.0	154.0
Fuel and light	150.5	151.5	151.8	148.7	143.6	143.6	142.5	144.9	147.1	147.9	149.0	149.7
Sundries	151.8	151.8	151.8	151.8	151.8	152.7	152.7	152.7	152.7	152.7	152.7	152.7
Combined	140.5	140.9	141.7	140.7	141.0	142.6	143.5	145.5	146.3	145.0	143.9	142.1

1938

Food	121.1	116.0	117.0	117.7	116.9	119.1	122.2	119.7	119.2	119.2	118.0	117.9
Clothing	159.2	154.3	155.9	150.8	150.5	152.6	149.9	151.2	153.8	150.0	149.5	148.9
Shelter	154.0	154.0	154.0	153.5	153.5	153.5	153.5	153.5	153.5	153.5	153.5	153.5
Fuel and light	150.0	149.8	149.5	148.4	147.1	147.3	147.3	147.8	150.1	151.1	151.6	151.7
Sundries	152.7	152.7	152.7	152.7	152.7	152.7	152.7	154.3	154.3	154.3	154.3	154.3
Combined	141.8	139.2	139.8	139.2	138.9	139.9	140.8	140.4	140.7	140.2	139.7	139.6

Table 6.—Cost of Living Index Numbers by Elements—Concluded

1939

Elements	January	February	March	April	May	June	July	August	September	October	November	December
Food	116.5	116.1	114.5	116.5	115.3	112.6	114.6	114.5	122.4	119.9	107.8	104.7
Clothing	148.9	149.4	149.5	149.2	149.9	150.7	150.0	149.5	148.6	149.7	151.5	152.1
Shelter	153.5	153.5	153.5	153.5	153.5	153.5	153.5	153.5	153.5	153.5	153.5	160.0
Fuel and light	151.7	151.8	151.6	150.4	144.9	145.7	146.4	147.1	147.8	149.4	151.6	152.1
Sundries	154.3	154.3	154.3	154.3	154.3	154.3	154.3	154.3	154.3	154.3	154.3	154.3
Combined	139.1	139.0	138.4	139.1	138.4	137.6	138.3	138.2	141.1	140.4	136.1	136.5

Appendix II

Fuel Statistics

Table 1.—New England Anthracite Tidewater Receipts by States—Net Tons

	Maine	New Hampshire	Massachusetts	Rhode Island	Connecticut	Total
1929	236,454	16,637	1,227,447	328,590	450,372	2,259,500
1930	274,540	17,425	1,235,486	271,210	422,441	2,221,102
1931	164,271	18,295	1,124,778	282,389	347,743	1,937,476
1932	148,217	9,732	1,013,674	212,103	275,210	1,658,936
1933	195,414	7,066	1,027,337	202,195	258,452	1,690,464
1934	167,891	20,389	946,203	189,512	265,941	1,589,936
1935	121,265	7,325	802,387	204,720	236,596	1,372,293
1936	126,697	14,039	791,972	198,647	266,718	1,398,073
1937	81,403	10,502	604,397	151,931	199,632	1,047,865
1938	93,116	2,203	554,084	136,768	190,999	977,170
1939	74,085	2,906	523,683	83,096	224,307	908,077

*Table 2.—*New England Anthracite Imports by States—Net Tons*

	Maine and New Hampshire	Vermont	Massachusetts	Rhode Island	Connecticut	Total
1929	46,493	43	321,977	115,468	—	483,981
1930	161,531	—	390,645	96,713	4,098	657,987
1931	61,823	—	412,524	122,595	13,703	610,645
1932	50,262	—	413,161	96,599	7,375	567,397
1933	18,864	—	336,829	67,512	7,392	430,597
1934	34,551	—	331,079	93,562	17,892	477,084
1935	36,947	—	397,508	105,039	18,630	558,724
1936	49,669	297	418,106	103,717	26,029	597,818
1937	32,767	—	287,384	62,551	12,611	395,313
1938	32,436	3	264,466	54,640	11,310	362,865
1939	21,355	1	221,885	48,238	6,655	298,134

*Included in above receipts.
Source: Bureau of Foreign & Domestic Commerce, Washington, D. C.

Table 3.—New England Anthracite All-Rail Receipts by Roads—Net Tons

	N.Y.,N.H. & Hartford	Boston & Maine	Boston & Albany	Central Vermont	Rutland	Total
1929	3,536,979	2,270,126	745,828	116,534	111,424	6,780,891
1930	3,302,715	1,990,504	660,106	110,868	104,988	6,169,181
1931	2,761,555	1,671,319	500,372	97,137	95,047	5,125,430
1932	2,170,685	1,293,753	353,056	78,796	83,497	3,979,787
1933	1,983,750	1,122,102	299,389	79,837	76,941	3,562,019
1934	2,407,555	1,415,482	372,645	101,600	85,152	4,382,434
1935	2,175,131	1,330,199	347,998	96,162	80,376	4,029,866
1936	2,065,518	1,292,195	351,893	94,501	84,560	3,888,667
1937	1,993,052	1,228,205	319,157	88,445	83,875	3,712,734
1938	1,896,921	1,120,156	314,597	80,884	78,142	3,490,700
1939	2,190,133	1,312,939	339,288	91,409	93,771	4,027,540

Table 4.—Deliveries of Domestic-Sized Anthracite and Average Retail Prices per Net Ton for Certain Representative Municipalities of Massachusetts with Four or More Dealers

City or Town	Deliveries*		Average Retail Prices October 1, 1939	
	1938-1939 Coal Year	1939 Apr. 1-Sept. 30 (6 mos. coal year)	Stove	Pea
Boston District	850,845	346,483	$12.40	$10.90
Adams	9,924	4,973	13.00	11.75
Brockton	18,993	9,959	14.25	12.25
Fall River	38,651	13,586	14.25	10.50
Fitchburg	21,119	7,075	12.50	11.50
Gloucester	22,836	9,062	13.75	12.00
Greenfield	15,852	5,416	12.50	11.00
Haverhill	26,072	13,830	12.00	10.50
Holyoke	30,950	10,432	12.50	11.15
Lawrence	49,448	22,279	14.00	12.35
Leominster	15,910	5,940	12.35	11.50
Lowell	44,882	17,103	13.25	12.25
Lynn	77,174	39,403	12.75	11.60
New Bedford	63,221	26,507	12.75	10.50
Newburyport	19,727	7,595	13.00	11.50
North Adams	23,705	8,759	12.50	11.25
Northampton	27,499	11,254	12.75	11.50
Peabody	8,206	3,783	13.10	11.75
Pittsfield	68,942	33,462	12.25	10.60
Salem	42,562	20,465	12.50	10.85
Springfield	92,064	36,209	12.95	11.25
Taunton	23,737	6,591	13.90	10.45
Westfield	10,278	3,170	13.00	11.50
Woburn	13,504	3,630	12.00	11.50
Worcester	86,642	34,333	13.15	11.73
City of Boston	541,050	230,794	12.50	11.10
Cambridge	54,133	14,318	12.40	10.85
Chelsea	17,668	8,919	12.50	10.50
Malden	16,204	6,664	12.40	10.85
Medford	15,538	5,457	12.10	10.65
Newton	26,601	11,031	12.75	10.85
Quincy	20,884	7,239	13.00	11.10
Revere	7,484	3,246	12.25	10.80
Somerville	45,533	16,196	12.25	10.85
Waltham	23,748	9,039	13.00	11.10
Watertown **	18,084	7,082	13.00	11.10

* Foreign Anthracite deliveries included.
** All of above included in Boston District figures together with Arlington, Belmont, Brookline, Everett, and Milton.

Table 5.—Deliveries of Domestic-Sized Anthracite for the last Eleven Coal Years—The Commonwealth of Massachusetts

(Coal Year, April 1 to March 31)

	Net Tons
1928-1929	4,912,810
1929-1930	4,703,019
1930-1931	4,177,238
1931-1932	3,565,768
1932-1933	2,968,429
1933-1934	2,938,197
1934-1935	2,637,722
1935-1936	2,608,815
1936-1937	2,483,158
1937-1938	2,483,369
1938-1939	2,320,674
1939-1940 (6 mos. April 1 to September 30)	937,501

Population of Massachusetts, 1935 (State Census) 4,350,910.

Table 6.—New England Bituminous Tidewater Receipts by States—Net Tons

	Maine	New Hampshire	Massachusetts	Rhode Island	Connecticut	Total
1929	2,262,177	189,479	8,266,550	1,721,817	2,089,730	14,529,753
1930	2,228,573	110,403	7,985,267	1,480,101	1,947,804	13,752,148
1931	1,658,313	158,381	7,298,032	1,432,536	1,817,958	12,365,220
1932	1,349,142	154,500	6,421,273	1,015,268	1,538,209	10,478,392
1933	1,364,431	202,096	6,716,260	1,196,162	1,718,277	11,197,226
1934	1,576,825	172,782	6,974,780	1,139,020	1,721,280	11,583,687
1935	1,616,357	136,987	6,544,356	1,052,205	1,666,916	11,016,821
1936	1,689,331	134,315	6,704,972	1,129,096	1,918,930	11,576,644
1937	1,696,495	187,506	6,918,651	1,147,418	2,540,237	12,490,307
1938	1,335,671	135,306	5,570,525	834,879	1,766,448	9,642,829
1939	1,530,748	164,544	6,171,634	1,030,490	2,136,056	11,042,472

*Table 7.—*New England Bituminous Imports by States—Net Tons*

	Maine and New Hampshire	Vermont	Massachusetts	Total
1929	44,273	—	5,841	50,114
1930	32,313	1	71	32,385
1931	61,463	106	5,159	66,728
1932	53,428	161	—	53,589
1933 [1]	32,431	—	—	32,431
1934	35,262	141	62	35,465
1935	55,599	296	6,380	62,275
1936	76,162	2,100	—	78,262
1937	61,351	1,311	—	62,662
1938	34,407	2,313	—	36,720
1939	60,558	19,977	—	80,535

* Included in above receipts.
[1] First six months only.
Source: Dept. Foreign & Domestic Commerce, Washington, D. C.

Table 8.—New England All-Rail Bituminous Receipts by Roads—Net Tons

	N. Y., N. H. & Hartford	Boston & Maine	Boston & Albany	Central Vermont	Rutland	Total
1929	4,023,064	1,043,822	1,195,308	317,535	201,911	6,781,640
1930	3,645,603	1,011,308	1,014,710	277,532	199,887	6,149,040
1931	3,313,695	1,016,494	818,523	265,037	197,046	5,610,795
1932	2,578,317	911,155	655,983	219,966	178,574	4,543,995
1933	2,545,254	1,146,059	684,748	229,732	181,226	4,787,019
1934	2,805,812	1,463,900	724,628	246,883	181,141	5,422,364
1935	2,709,333	1,358,492	681,729	278,339	182,390	5,210,283
1936	2,542,113	1,363,988	691,466	296,444	184,133	5,078,144
1937	2,373,397	1,354,095	672,649	310,049	174,917	4,885,107
1938	1,934,093	1,218,580	553,111	240,131	157,719	4,103,834
1939	2,200,215	1,363,504	623,659	260,808	178,202	4,626,388

Table 9.—New England All-Rail Movement of Coal as Shown by Number of Cars of Coal Passing East Through the Gateways
(Daily Average)

Years	Anthracite				Commercial Bituminous			
	Boston & Maine	Boston & Albany	New York, New Haven & Hartford	Total	Boston & Maine	Boston & Albany	New York New Haven & Hartford	Total
1927	140	50	210	400	74	62	135	271
1928	137	47	245	429	68	49	108	225
1929	134	43	222	399	74	60	121	255
1930	101	47	202	350	62	51	110	223
1931	75	32	177	284	49	40	102	191
1932	77	23	142	242	47	32	84	163
1933	68	21	133	222	51	34	85	170
1934	86	25	157	268	61	35	95	191
1935	81	24	141	246	57	34	92	183
1936	80	25	241	241	59	33	80	172
1937	75	23	124	222	57	31	75	163
1938	69	22	124	215	47	24	62	133
1939	80	24	139	243	52	28	68	148

Table 10.—United States Production—Net Tons

	Anthracite	Bituminous
1929	73,828,000	534,989,000
1930	69,732,000	461,879,000
1931	59,646,000	378,241,000
1932	49'855,000	309,710,000
1933	49,541,000	333,631,000
1934	57,168,000	359,368,000
1935	52,159,000	372,373,000
1936	54,760,000	434,070,000
1937	50,037,000	442,455,000
1938	44,060,000	342,407,000
1939	51,487,000	393,650,000

Table 11.—Summary of Fuels Used for Heating Homes in Massachusetts—Net Tons

		Anthracite		
	*Domestic	Buckwheat	Bituminous	Coke
1926-1927	5,088,000	150,000	600,000	475,000
1927-1928	4,727,000	185,000	630,000	525,000
1928-1929	4,913,000	138,000	495,000	637,000
1929-1930	4,703,000	160,000	500,000	640,000
1930-1931	4,177,000	175,000	800,000	895,000
1931-1932	3,566,000	150,000	600,000	980,000
1932-1933	2,968,000	155,000	700,000	1,061,000
1933-1934	2,938,000	172,000	800,000	1,318,000
1934-1935	2,638,000	191,000	850,000	1,020,000
1935-1936	2,609,000	195,000	950,000	1,081,000
1936-1937	2,483,000	178,000	900,000	1,027,000
1937-1938	2,483,000	192,000	823,000	919,000
1938-1939	2,320,000	176,000	828,000	805,000

	Briquets	Oil (Gals.)	[1] Other Manufactured Fuels	[1] Gas (Cu. Ft.)	No. of Homes
1926-1927	125,000	48,000,000	—	—	1,050
1927-1928	190,000	65,000,000	—	—	1,740
1928-1929	193,000	80,000,000	—	—	2,925
1929-1930	190,000	100,000,000	—	—	4,344
1930-1931	150,000	140,000,000	—	—	5,049
1931-1932	125,000	184,000,000	—	—	5,100
1932-1933	101,000	300,000,000	—	2,425,060,000	4,927
1933-1934	90,000	400,000,000	52,000	2,248,982,000	4,497
1934-1935	62,000	500,000,000	15,000	2,853,078,000	6,433
1935-1936	66,000	650,000,000	10,000	3,103,192,000	6,827
1936-1937	56,000	750,000,000	5,000	3,301,593,000	7,427
1937-1938	46,000	795,000,000	12,000	3,269,266,000	7,977
1938-1939	39,000	823,000,000	12,000	3,480,500,000	8,386

* Includes foreign fuel. [1] Not compiled for these periods.

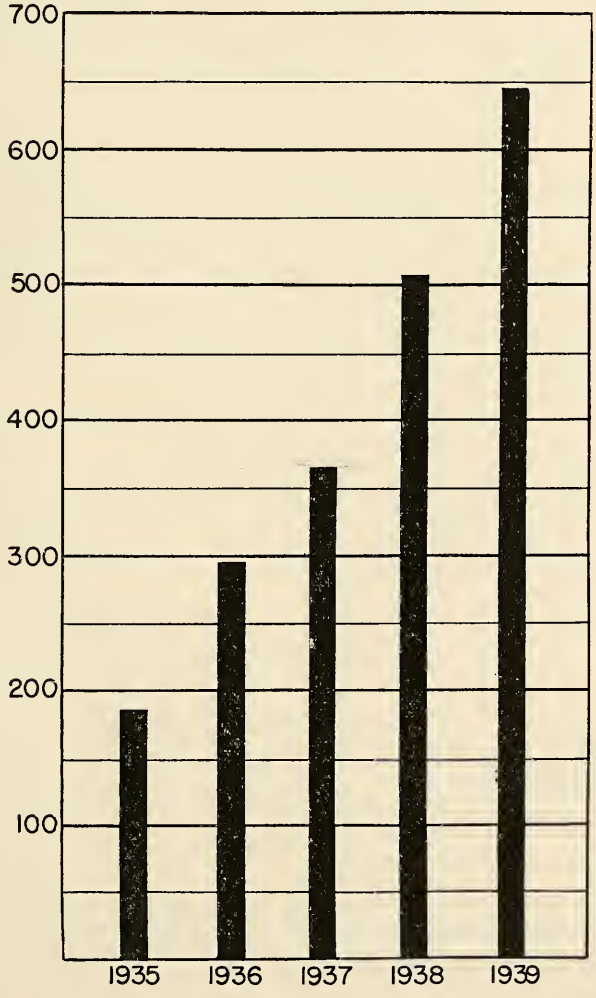
REPORT OF THE DIVISION OF OCCUPATIONAL HYGIENE

MANFRED BOWDITCH, *Director*

The end of the fiscal year 1939 brought to a close the first five years of the division's activities. From the viewpoint of work done, it has been a period of healthy growth and increasing usefulness to the industries of the commonwealth. The simplest illustration of this is the basic work record, in which the nature of each "job" done by the staff is recorded on a serially numbered card. A "job" may be the response to a relatively simple inquiry or may involve weeks or even months of investigation and rectification of unhealthy conditions in some place of work. Requests for publications are not so recorded, nor is the co-operation given to educational, research and governmental organizations hereinafter described.

The work record shows 187 "jobs" undertaken in 1935, 296 in 1936, 365 in 1937, 508 in 1938 and 645 in 1939, a rate of increase more clearly shown in Figure 1, below.

Figure 1. The Five-Year Work Record



Personnel.—It should again be noted that this increased work load has been borne by a staff which has not been augmented by a single full-time worker since the establishment of the division five years ago. Efforts to secure funds for the employment of greatly needed additions to the personnel have again met with failure, but there is indication, as the year closes, that the federal grant for this purpose so long denied to Massachusetts will be made available early in 1940. The part-time W.P.A. workers assigned to the laboratory have continued to be invaluable in this difficult situation. Varying in number through the year, four such workers (three men and one woman), as well as four National Youth Administration typists (two men and two women), were employed at its close. The fact that twelve of the relief workers allocated to this office have now secured private employment is cause for gratification.

Quarters.—The division continues to occupy the first floor, basement and one second floor room at 23 Joy Street, Boston. Additional space is available in the event of substantially increased personnel.

Equipment.—Major additions to the field and laboratory equipment during the year were (1) a 36-inch fractionating column, (2) a M.S.A. electrostatic precipitator, and (3) a M.S.A. midget impinger.

Reference Library.—The more important texts published in 1939 have been added to the division's already substantial reference library, the use of which by industrial and research workers continues to increase. Much of the time of the Youth Administration typists has again been devoted to making copies of translations and references not otherwise available.

Routine Work

The division's routine work has continued to comprise, in the main, field investigations and determinations of atmospheric dust and fume concentrations, followed by the laboratory work on which its findings and recommendations for control of hazardous conditions are based. The more simply handled requests for information on subjects of industrial health have this year been greatly exceeded (253 to 392) by those demands on its services calling for actual factory studies. Co-operation with governmental and research agencies outside the state has involved response to 70 inquiries, in return for which much valuable information has been secured.

Analysis of the year's total of 645 items of routine work again shows employers, insurance and governmental agencies to be the principal outside *sources* of requests for service. The fact that intradepartmental calls have totalled more than twice last year's number is noted with gratification. Self-initiated routine work, largely plant studies to throw light on problems in other factories, has again substantially increased, as have the follow-ups which insure continued observance of the division's recommendations.

Self-initiated	171	Protective equipment manufacturers	14
Employers	88	Industrial chemical manufacturers	12
Follow-up	74	Labor organizations	9
Insurance	63	Publishers	7
Governmental	55	Attorneys	6
Intradepartmental	50	Employer association	1
Physicians, hospitals	42	N. O. C.	7
Education, research	30		
Industrial workers	16		
Total	645		

Classification by *nature of the industry* for the first time displaces the dusty granite industry from the head of this list. The hereinafter noted investigation of the use of benzol cements in shoe repair shops, pursuant to the death of a cobbler apparently from this cause, is responsible for this. The relatively high

figure for electrical products manufacturing is mainly due to the development of a close advisory relationship with several large factories of this type. Inquiries dealing with a variety of industries form the greater part of the group not otherwise classified. The different lines of manufacture investigated by this office now total 184.

Shoe repairing	84	Woolen, worsted textiles mfg.	3
Granite mfg.	41	Aircraft mfg.	2
Electrical products mfg.	30	Burlap bag cleaning	2
Rubber products mfg.	19	Can mfg.	2
Printing	18	Cast iron pipe mfg.	2
Chemicals mfg.	16	Contracting	2
Metal products mfg.	15	Food products mfg.	2
Shoe mfg.	15	Fuller's earth, production of	2
Painting	14	Gasoline station	2
Foundry	13	Mining, N. O. C.	2
Artificial leather mfg.	12	Motor transportation	2
Machinery mfg. N. O. C.	11	Office work	2
Metals refining	11	Public works	2
Paint, varnish, lacquer mfg.	9	Storage battery mfg., repairing	2
Patent leather mfg.	9	Stove mfg.	2
Tanning	9	Valves, injectors mfg.	2
Dry cleaning	8	Wood products mfg.	2
Rock crushing	8	Adhesives mfg.	1
Granite quarrying	7	Armory	1
Glass products mfg.	6	Asbestos products mfg.	1
Hospitals	6	Bakery products mfg.	1
Synthetic resins mfg.	6	Boat building	1
Wood heel mfg.	6	Brush mfg.	1
Automobile body mfg., repairing	5	Building construction	1
Felt hat mfg.	5	Coal mining	1
Housekeeping	5	Cranberry growing	1
Paving products mfg.	5	Cutlery mfg.	1
Rock quarrying	5	Dye mfg.	1
Tunneling	5	Exterminating	1
Educational institutions	4	Fire department	1
Electric utility	4	Fish packing	1
Fur cleaning	4	Floor coverings mfg.	1
Laundry	4	Fumigants mfg.	1
Paper products mfg.	4	Fur carroting	1
Rayon yarn mfg.	4	Furniture mfg.	1
Textile mfg.	4	Gravel, production of	1
Abrasives mfg.	3	Hairdressing	1
Automobile mfg., repairing	3	Heating equipment mfg., installation	1
Cotton textiles finishing	3	Instrument mfg.	1
Electroplating	3	Leather soles mfg.	1
Explosives mfg.	3	Lime mfg.	1
Furniture sales	3	Motion picture exhibiting	1
Garment mfg.	3	Optical goods mfg.	1
Jewelry mfg.	3	Paint, varnish, lacquer sales	1
Newspaper publishing	3	Paperhanging	1
Novelties mfg.	3	Photoengraving	1
Petroleum refining	3	Photography	1
Railroad	3	Poultry dressing	1
Shipbuilding	3	Pump mfg.	1
Telephone	3	Refrigeration	1
Tool mfg.	3	Refrigerator sales	1
Toy mfg.	3	Restaurant operating	1
Wood heel covering	3		

Rock wool mfg.	1	Welding	1
Roof coverings mfg.	1	Wire cable mfg.	1
Silverware mfg.	1	Wood meal mfg.	1
Soap mfg.	1	Woodworking	1
Straw hat mfg.	1	Wool scouring	1
Submarine salvage	1	X-ray film reclaiming	1
Watch, clock mfg., repairing	1	N. O. C.	92
Total	657		

Analysis by *operations* gives a total of 174 different types of industrial work, as well as a number of groups not readily classified. Fifty-four of these operations are new with this year's list, a total of 341 operations having been investigated in the five years of the division's activities.

Rubber cementing	101	Printing	4
Granite cutting	38	Rayon xanthating	4
Paint, varnish, lacquer removing	21	Type cleaning	4
Paint, varnish, lacquer spraying	15	Wood sanding	4
Metals cleaning, degreasing	14	Wood shaping	4
Foundry work, dusty, N. O. C.	13	Acid dipping	3
Metals spraying	13	Foundry shakeout	3
Rock crushing	12	Garment pressing	3
Fabric coating	10	Garment spotting	3
Laboratory work, N. O. C.	10	Heating equipment operating	3
Lead melting	10	Metals grinding	3
Leather japanning	9	Rayon yarn finishing	3
Rock drilling	9	Resin molding	3
Electric welding	8	Rubber compounding	3
Lead casting	8	Tanning	3
Paint, varnish, lacquer mixing	8	Tumbling, barrel	3
Wood heel covering	8	Battery plate casting	2
Chemicals mixing	7	Battery plate pasting	2
Cleaning, N. O. C.	7	Bronze welding	2
Granite drilling	7	Burlap bag cleaning	2
Soldering	7	Castings cleaning	2
Condenser, coil impregnating	6	Chrome plating	2
Dope mixing	6	Dusty, N. O. C.	2
Electroplating	6	Excavating	2
Foundry molding	6	Fabric cleaning	2
Garment cleaning	6	Felt hat forming	2
Glass grinding	6	Felt hat shrinking	2
Abrasive blasting	5	Fur blowing	2
Fur cleaning	5	Granite polishing	2
Furniture polishing	5	Lead oxide mixing	2
Leather buffing	5	Metals machining	2
Leather finishing	5	Meter cleaning	2
Painting, brush	5	Monotype casting	2
Photoengraving	5	Rayon yarn spinning	2
Rubber curing	5	Stereotyping	2
Asphalt mixing	4	Storage battery assembling	2
Chemicals making, N. O. C.	4	Tunneling	2
Fabric printing	4	Waste carbonizing	2
Fumigating	4	Bagging	1
Heat treating	4	Blackboard writing, erasing	1
Metals polishing	4	Bleaching	1
Paint, varnish, lacquer dipping	4	Building insulating	1
		Cadmium melting	1
		Cardboard cutting	1

Carpentering	1	Nursing	1
Clerical work, N. O. C.	1	Office, N. O. C.	1
Concrete mixing	1	Oxyacetylene cutting, welding	1
Condenser rolling	1	Paint burning	1
Confectionery making	1	Paper coating	1
Container filling	1	Paper hanging	1
Cotton bleaching	1	Photographic developing	1
Cotton dyeing	1	Plastics molding	1
Disinfecting	1	Poultry waxing	1
Diving	1	Power lines maintenance	1
Dye mixing	1	Radium dial painting	1
Enamel baking	1	Rayon mixing	1
Enamel dipping	1	Rayon yarn washing	1
Felt hat buffing	1	Refrigerator repairing	1
Felt hat pressing	1	Resin machining	1
Fire fighting	1	Rock quarrying	1
Fish handling	1	Rock screening	1
Floor covering	1	Rubber cement mixing	1
Food baking	1	Sandpaper making	1
Foundry cleaning	1	Sawdust grinding	1
Foundry core knockout	1	Screw machine operating	1
Foundry sand conditioning	1	Sewing	1
Fur carroting	1	Shampooing	1
Fur handling	1	Shoe buffing	1
Gas generator operating	1	Shoe cleaning	1
Gas, oil heater operating	1	Shoe treeing	1
Gasoline station attending	1	Soap making, N. O. C.	1
Gasoline storage	1	Solder grinding	1
Glass fabric handling	1	Sole stiffening	1
Grinding wheel baking	1	Straw hat dipping	1
Grinding wheel coring	1	Sulfur grinding	1
Grinding wheel machining	1	Synthetic rubber treating	1
Insecticide application	1	Tape coating	1
Instrument cleaning	1	Textile dyeing	1
Insulation packing	1	Trucking	1
Lead cutting	1	Warehousing	1
Leather toggling	1	Waste sorting	1
Lime handling	1	Wire insulating	1
Linotyping	1	Wood sawing	1
Metals melting, N. O. C.	1	Woodworking, N. O. C.	1
Metals pouring	1	Wool degreasing	1
Metals treating	1	X-ray film washing	1
Motion picture projecting	1	X-ray operating	1
Naphthalene dipping	1	N. O. C.	101
Total	730		

The importance and ubiquity of the silica dust hazard are well illustrated by the fact that it continues to head the list of *harmful materials* despite the relegation of the granite and foundry trades to second and tenth places, respectively, in the foregoing list of industries studied. Benzol, for reasons which the later pages of the report will make plain, this year outranks lead by a substantial margin. The total of 99 items in the following list is interestingly close to last year's 98 and that of the year before, 97. The five-year total, eliminating duplications, now stands at 198.

Silica dust	110	Lead, lead compounds	53
Benzol	98	Inorganic dust, N. O. C.	28
Solvents, N. O. C.	60	Gasoline, naphtha	26

Toluol	23	Trinitrotoluol	2
Carbon tetrachloride	21	Zinc, zinc compounds	2
Trichlorethylene	18	Acids, N. O. C.	1
Organic dusts, N. O. C.	14	Air pressure	1
Cyanides	13	Allyl chloride	1
Mercury, mercury compounds	12	Amyl alcohol	1
Methanol	12	Butyl alcohol	1
Chlorinated naphthalenes	11	Butyl mercaptan	1
Skin irritants, N. O. C.	10	Cellosolve	1
Carbon monoxide	9	Coal dust	1
Fumes, N. O. C.	9	Coco bolo dust	1
Heat	9	Cotton dust	1
Chromic acid, chromates	8	Cresol	1
Formaldehyde	8	Dichloro-difluoro methane	1
Hydrogen sulfide	6	Diethylene glycol ethyl ether	1
Nitrogen dioxide	6	Dyes	1
Xylol	6	Ethylene dichloride	1
Asbestos dust	5	Fatigue	1
Carbon bisulfide	5	Fuller's earth	1
Fluorides	5	Glass dust	1
Humidity	5	Kerosene	1
Leather dust	5	Ketene	1
Eye irritants, N. O. C.	4	Lead tetraethyl	1
Infection	4	Methyl bromide	1
Paraffin	4	Methyl methacrylate	1
Turpentine	4	Naphthalene	1
Wood dust	4	Nitric acid	1
Amyl acetate	3	Noise	1
Arsenic, arsenic compounds	3	Ozone	1
Cadmium, cadmium compounds	3	Phosgene	1
Carbon dioxide	3	Pine oil	1
Hydrochloric acid	3	Rhodium	1
Lime	3	Rubber dust	1
Methylene Chloride	3	Sodium peroxide	1
Phenol	3	Sodium silicate	1
Radiant energy	3	Sulfur chloride	1
Welding fumes	3	Sulfur dioxide	1
Ammonia	2	Sulfur dust	1
Chlorinated diphenyls	2	Synthetic resin dust	1
Chlorinated hydrocarbons, N. O. C.	2	Talc	1
Cutting oils	2	Temperature change	1
Gum arabic	2	Thio beta naphthol	1
Hydrofluoric acid	2	Trauma, N. O. C.	1
Radium	2	Tricresyl phosphate	1
Rock wool dust	2	Vinyl acetate	1
Rubber accelerators	2	Zirconium	1
Sodium carbonate	2	N. O. C.	62
Total			775

A total of 326 visits to industrial establishments were made by members of the staff in connection with this routine work. Field determinations of fume and dust concentrations totalled 316 and laboratory determinations 855. Field and laboratory work in connection with special activities is apart from the above and will be so recorded.

Engineering Studies

Special studies carried out or continued during the year by the division's engineer dealt with the ventilation of garages, glass grinding operations in mirror and plate glass shops, further development of dust control in granite cutting sheds, the dust problem incident to rock crushing and that involved in the operation of small iron foundries. A brief statement on each of these subjects follows.

Garage Ventilation

A study of conditions in repair garages with respect to concentrations of carbon monoxide was made in five large establishments. Day-long observations with the carbon monoxide indicator in each garage under both summer and winter conditions led to the conclusions noted.

Concentrations in the general air sufficient to cause headaches and nausea (100 parts per million) occur very rarely in warm weather when doors and windows are open. In cold weather, when outdoor temperatures are such as to require keeping doors and windows closed, high concentrations may occur when work is sufficiently brisk. The uncertain nature of the business makes it impossible to define with any accuracy the frequency of unhealthful concentrations.

Typical of the variability of atmospheric conditions in garages are the test results set forth in Table I. The concentrations of carbon monoxide listed are in each case the average of numerous measurements made over a period of several hours in the same garage. The five tests were made in different seasons spanning two and one-half years.

Table I. Carbon Monoxide in the Air of a Garage

Month	*Weather*	*Carbon Monoxide Concentration Parts Per Million*
May	warm	90
March	mild	100
January	cold	50
December	cold	150
		180

The permanent effects of breathing air containing such concentrations of carbon monoxide over a period of years are not definitely established, although it is held that workers with certain pre-existing disorders may be injured by repeated exposures sufficient to cause temporary disturbance of normal physiological functions. The intense headache, dizziness, nausea and vomiting to which garage workers are subject on many days during the winter season is a matter of common knowledge in the trade. No one who is acquainted with the distress accompanying these symptoms can argue that remedial measures should not be required.

The most economical and efficient solution of the problem of removing gases from cars being tested appears to be the provision of flexible suction devices designed to remove exhaust gases at the end of the tail pipe before they escape into the room. Such a device, to be practical and effective, must meet several requirements which are not met by the practice, formerly common in garages, of attaching a rubber hose to the tail pipe and running the other end through a window. These are as follows:

1. The suction inlets should be within easy reach of cars being tested without the necessity of maneuvering the cars to an exact position. This means that they should be convenient to the rear end of a car when it is headed toward an outer wall.

2. It should be possible to attach the suction device to the tail pipe in a few moments. This implies the necessity of an inlet large enough to accommodate tail pipes equipped with the fan-shaped deflectors so common nowadays.

3. The inlet should be quickly detachable and arranged to be swung completely out of the way of any moving cars when not in use.

4. A safety coupling that will automatically part if a car is inadvertently moved from its position with the device attached is advisable.

5. Metal parts should be padded to avoid accidental marring of the bodies of cars.

6. Exhaust capacity of about 50 cubic feet of air per minute should be provided for each hose.

In contrast to the system outlined above, in which exhaust gases are removed at their source, is the method of general ventilation by propeller window fans. For this method to be effective, a fan capacity sufficient to provide for the removal of 5000 cubic feet of air per minute for each car motor in operation is necessary. Cold weather heating requirements for these air volumes are so great as to render this method impractical for most repair garages and a wasteful one in any case.

Plate Glass Grinding

In response to a statement that the glass grinding operations conducted in mirror and plate glass shops involve a dust hazard, visits were made to five of these establishments.

It was learned that, in the beveling of plate glass, the preliminary operation of grinding is conducted on cast iron discs rotating on a vertical axis, on the surface of which a slurry of carborundum powder flows continually. Following this, the bevel or edge, as the case may be, is further ground on a sandstone wheel termed "Newcastle stone" and obtained from England. This is a stone of extremely fine grain which, in use, develops a smooth, polished surface. A small stream of water flows over it during the grinding. As with the cast iron disc grinders, the stone is rotated on a vertical axis and grinding takes place on the horizontal surface. Following this operation, subsequent finer grinding and polishing takes place on cork, felt and wooden wheels with various grades of pumice powder and rouge as the abrasive.

The sandstone wheels, when new, are three inches thick and twenty-eight inches in diameter. Estimates of their total life given by various persons interviewed were 4 years, 5 years, 7 to 8 years and 15 to 20 years. The frequency with which dressing of the stone surface is required is dependent on the nature of the work being ground and varies from twice a day to once in two to three weeks. The dressing operation is accomplished by holding a fine-grained carborundum block in contact with the surface. An electric light placed close to the surface of the stone during this operation failed to expose any visible dust. This was also true during the actual grinding of glass.

It seems fair to conclude that concentrations of dust incident to the use of these wheels in this industry are insignificant.

Granite Cutting

At the year's end, 94 per cent of the 151 bankers in the granite cutting sheds of the Quincy area had been equipped with local exhaust systems, as compared with 71 per cent at the end of 1938. It is estimated that the total cost of this equipment has been between $12,000 and $13,000. With the bulk of bankers so equipped, the problem of educating the workers in its faithful use is a task that remains.

The next most pressing dust problem in this industry is the improvement of exhaust systems for surfacing machines. While all such machines have for years been equipped with exhaust systems, the majority have been inadequate to the task of removing all dust from the breathing zone. The encircling

hood described in last year's report has in a number of cases proved to be an economical solution of the problem, since it can be installed on existing equipment, usually at a cost not exceeding twenty dollars. Those installed in various shops have been faithfully used, proving the groundlessness of the initial objection that they would seriously impede the work.

Numerous measurements have shown that the average production of dust of a fineness sufficient to be maintained in air suspension for an appreciable period of time varies from about one-half to one pound per hour for hand pneumatic tools and that surfacing machines produce such dust in quantities varying from 15 to 20 pounds per hour. Thus, in the average shop, surfacing machines account for 90 to 95 per cent of the total atmospheric dust and installation of dust collectors for these machines would reduce atmospheric contamination by this amount. These figures will be modified in some degree where sandblasting equipment is used to any great extent. When in continuous operation, this machine produces about 5 pounds of dust per hour and may in some cases also require the use of dust collectors.

Rock Crushing

Rock crushing is one of the dustiest of industries. Whereas the fine dust produced by the average granite shed seldom exceeds 100 pounds per day, 12,000 to 16,000 pounds per day is normal for the typical rock crusher. The relatively small number of employees in such establishments tends to make it appear less significant as a health hazard from a statistical standpoint, but the problem is no less a real one and is, incidentally, notorious as a producer of neighborhood dust nuisances.

Studies made of the ventilation requirements of the various crusher operations included special attention to the question of dust collectors, the latter being especially important because of the large amounts of dust characteristic of the work. Two large plants had made plans for the installation of complete dust control systems at the year's end. Recommendations in considerable detail were prepared for the guidance of each and arrangements made for careful checking of plans with a view to aid in securing installations not only of maximum efficiency but also at minimum expense.

The high cost of such systems has tended in the past to militate against their more widespread use. One Massachusetts plant installed such a system a few years ago at a total cost of $12,000, whereas, in the present cases, it is hoped to secure equally effective equipment at a cost of not over half this figure.

Iron Foundries

The dust produced in small iron foundries incident to the dumping of castings and conditioning of sand may or may not be a problem requiring remedial measures. When small castings are dumped almost immediately after pouring and within a period of one hour or less, the dust problem is usually minimized by the shorter exposure of the workmen and also because less dust is generated when a major portion of the sand in the mold is not afforded an opportunity to dry out and thereby form dust when dumped. In those foundries where, for one reason or another, the molds are left for a night shift to dump, a dust hazard may exist and must be determined by means of dust counts.

As for the conditioning of sand, it is common in small foundries to wet the sand after the brief dumping period at the end of the day and allow it to set overnight. In the morning, molders or their helpers "cut it over" with shovels in preparation for molding. No appreciable dust is associated with this arrangement. Where, on the other hand, the sand is conditioned by mechanical means, this is usually done at night and may be a source of considerable dust.

All the foundries, nine in number, in one inspection district were studied with especial attention to the question of dustiness incident to dumping of castings and conditioning of sand. Of the nine, six completed the dumping of molds in less than an hour and conditioned the sand by hand. It was concluded that in these plants there was no important dust hazard.

In the other three foundries a night shift, averaging four men, took care of these operations. In two of these establishments, concentrations of 15 to 20 million particles per cubic foot were found. Dust concentrations below 25 million particles per cubic foot are considered satisfactory for this type of work. In the third foundry, figures considerably higher than this were obtained, indicating the need for improved ventilation.

One hundred and seventy visits to plants were made in connection with these engineering studies.

Industrial Chemical Survey

The industrial chemical survey inaugurated in 1936 was continued throughout the year just closed. The work of this survey, undertaken to secure information as to the extent and manner of use of chemical substances potentially hazardous to health in the industries of the commonwealth, has been carried on, under supervision, by a small group of technically trained men made available by the Work Projects Administration.* While the change in W. P. A. policy referred to in last year's report has continued to restrict in some degree the field activities of these men, a substantial amount of not unimportant work has been completed and their usefulness in the laboratory is well worthy of this second emphasis. Brief summaries of investigations into the hazardous aspects of patent leather manufacture, felt hat manufacture and the industrial uses of benzol, as well as a study of methods for the determination of lead fumes, follow. All but the first named, conducted by the engineer, were carried out under supervision of the division's chemist.

Patent Leather Manufacture

There are in operation in this state, so far as is known, six plants engaged in the manufacture of patent leather. Two more are equipped to so manufacture, but were not doing so during the period of this study. The patent leather industry is centered in Woburn and in that city alone there have been in the past as many as two dozen plants. Subject to the vagaries of market demand for patent leather, the industry has been depressed for several years. Some of these shops have been destroyed by fire and others have gone out of business, leaving only four companies in operation in that city.

Some fifteen or more years ago, due to the use of a nitrocellulose dope for coating leathers, an epidemic of benzol poisoning took the lives of a number of workmen and incapacitated several others. Today only one plant does any work of this sort and the dope used contains toluol in place of benzol. This work accounts for only a minor part of the production and during only about three months of the year.

The fire hazard is substantial in this industry and many of the practices and modes of building construction are a reflection of care taken to minimize this danger.

The Process.—The "daub" for coating the sides of leather is always made in a separate small building by boiling linseed oil and diluting it with naphtha to form a quick-drying heavy bodied varnish. This is usually done in open kettles on wheels that run on tracks, and it is common practice to move the kettle to the exterior of the building before adding the naphtha.

*W. P. A. Project No. 665-14-3-409.

The sides of leather are fastened to a rectangular frame by means of strings attached to various points at the edge of the leather. The men who do this work are called "tackers." The output of one tacker is just about that required to keep one dauber busy and the tackers are usually located opposite to the daubers in the daub room. In one plant whole hides are thus treated, requiring two men daubing on the same piece simultaneously. In all others, the units are sides of leather, on which one man works alone.

The dauber, using a simple blunt metal edge, applies the black varnish of jellylike consistency to the surface of the leather with a scraping action of the tool. Each frame, as finished, is placed on its long edge on the floor beside him. After an accumulation of three to four hours, "luggers" carry the frames away to the "coop."

The coop is a separate room which serves as a drying oven. It is commonly about 20 to 30 feet square and 10 to 15 feet high, with coils of steam pipes running beneath a false floor and vents in the roof. When the coop has been filled and the day's work is over, the full pressure of steam is turned on and the daubed sides are allowed to dry overnight.

On the following day the sides are removed to the finishing room, frequently located on the second floor over the daub room. There are usually about as many finishers as daubers. The finisher applies comparatively thin varnish to the daubed leather with a large brush as the frame rests horizontally over a receptacle whose shape gives it its name, the "boat." Each side, after receiving this coat, is immediately placed in a drying oven. The ovens in the typical finishing room occupy one entire side of the room and consist of a series of adjacent stalls running from floor to ceiling, each stall being equipped with horizontal runners which serve to support the frames in a horizontal position two to three inches apart. Large movable steps are used in placing the frames in the oven as high as 15 feet above the floor. Steam coils cover the floor of each stall or oven and a gentle heat is maintained in these coils during the day. There are usually also steam pipes running the length of the room along the outside wall under the windows, these serving to provide additional heat to the room and to prevent the varnish temperature from dropping below the desired point. At the end of the workday, as in the case of the daubed product, the steam pressure is turned on full and the finished sides are allowed to bake overnight. In the morning, luggers remove these sides to adjacent fields if the day is sunny and the rays of the sun complete the job.

Some of the work in all the plants may be sprayed with lacquer to give finishes of different types or colors. Toluol is used as a diluent of the thinner. This work is intermittent. Two of the plants visited had spraying methods

TABLE II. ATMOSPHERIC NAPHTHA CONCENTRATIONS IN PATENT LEATHER PLANTS

Plant	Daub Rooms		Finishing Rooms			
	Atmospheric Naphtha (Milligrams Per Liter)		Location	Atmospheric Naphtha (Milligrams Per Liter)		Temperatures
		Avg.			Avg.	
A	1.62, 1.46	1.5	2nd floor	No tests		90° 75°
B	2.0, 2.3, 3.1	2.5	2nd floor	0.1, 1.0, 0.4, 1.1	0.6	80°
C Room 1. Room 2.	2.2, 1.9 3.2, 3.6, 3.7	2.1 3.7	1st floor	2.6	2.6	91°* 98°**
D Room 1. Room 2.	1.4, 1.2, 2.1, 3.0 1.1, 0.8, 1.5, 1.4	1.9 1.2	2nd floor	No tests		
E	4.7, 3.3, 2.9, 3.3, 4.8, 4.1, 3.7	3.8	2nd floor	No tests		
F	4.7, 4.3, 2.4, 3.9	3.8	1st floor	0.9, 0.9	0.9	95°****

*Winter weather. **92° outside. ***88° outside.

for applying the finish coats. One of these applied the varnish by means of the usual hand-held spray gun, located in a spray booth. The other employed mechanically-held and moving spray guns, the frames passing through the machine on a conveyor. This device was equipped with special exhaust hoods.

Atmospheric Naphtha.—Table II summarizes the exposures to naphtha and gives dry bulb temperatures in certain of the finishing rooms.

It will be noted that daub room concentrations vary from 1.2 mg. to 3.8 mg. per liter. It is to be expected, however, that in practically all daub rooms having no mechanical ventilation, concentrations of 3 to 4 mg. per liter would frequently occur in cold weather. The amount and nature of the ventilation required is dependent upon the rate of evaporation of the naphtha vapor. An attempt was made to secure estimates from several of the plants visited as to the quantities of naphtha in the daub as used. The estimates were in all cases given from rough mental calculations and are summarized on a uniform basis in Table III.

Table III. Naphtha Consumption in Patent Leather Plants

Plant	Gallons Per Day Per Man
E	5.6
C	9.0
D	8.0

At Plant D, the consumption of a dope containing 25 per cent butyl acetate, 25 per cent toluol, 25 per cent butanol and 25 per cent blown castor oil and nitrocellulose was estimated at 5.0 gallons per man per day.

Daub Room Ventilation.—It is not to be supposed that these differences actually exist between the different plants. It is believed that they are merely the result of the approximate method of estimation. The conservative figure of 9 gallons per 6½-hour day has been taken as the basis for ventilation calculations. An analysis of the operation indicates that, because of the high value of the permissible atmospheric concentration and of the very large areas from which the naphtha evaporates, a local exhaust system of ventilation is ruled out as a practical method and forces resort to general ventilation methods. The 9 gallons per day figure is equivalent to 0.023 gallons per minute. To dilute this quantity of solvent to the maximum permissible concentration of 3 mg. per liter (about 1000 p.p.m.) will require about 1250 cubic feet of air per minute per man.

Finishing Room Conditions.—It will be noted from Table II that concentrations of naphtha in the finishing room of the one plant tested which did not employ special methods of application were below the maximum permissible concentration. The high temperature prevailing, however, made conditions seem quite unbearable to the casual visitor. In the two plants employing spray methods, concentrations of naphtha were found to be within reasonable values and temperatures tended also to be lower, due to the general ventilation resulting from the action of the spray booth fans.

In general, it has been observed that temperatures of 90° to 100° with natural humidity content are common in the old type of finishing room. The impression was gained that, where finishing rooms are located on the second floor, windows or doors are more likely to be open during the working period, tending to mitigate conditions. Where the finishing room is located on the ground floor, the necessity to maintain the workroom reasonably free of dust usually requires all doors and windows to be kept closed.

The remedy proposed for all finishing rooms is the provision of general ventilation by means of propeller fans, located in the roof above the ovens, to withdraw the hot air which naturally collects at that point. The supply air will enter through doors and windows at floor level and, where dust is considered a factor, provision of filter cloth in the several windows and doors through which supply air enters will eliminate this difficulty.

Felt Hat Manufacture

The manufacture of fur felt hats has long been known to be a potential source of mercury poisoning, caused by absorption of the mercury which has been added to the fur in the previous process known as carroting. For this reason the three plants in this state engaged in the manufacture of hat bodies from fur have been subjected to study. In addition, the possibility of mercurialism from hat finishing processes was investigated. There is also one fur carroting plant in the state.

Mercury vapor determinations were made in these three hat body manufacturing establishments and in one plant where men's fur felt hats are finished. These measurements were made mainly with the lamp-shade type of mercury vapor detector. In addition, some samples were taken by the freeze-out method, and an attempt was made to determine mercury salt vapors by absorption in water. No measurements of mercury in dust were made, but previous studies by the United States Public Health Service and the Connecticut Bureau of Occupational Diseases have indicated that this is usually of secondary importance.

In addition, urine samples were obtained from numerous workers on jobs where there is apparently the greatest mercury vapor exposure, and these have been analyzed for mercury. The most important tests, involving both atmospheric and urinary mercury determinations, were made both in summer and in winter. The results of the mercury vapor determinations are summarized in Table IV.

Table IV. Mercury Vapor Concentrations in Felt Hat Plants

Department	No. Tests	Atmospheric Mercury Concentrations (Milligrams Per 10 Cubic Meters)		
		Maximum	Minimum	Average
Blowing Room—Summer	6	7.5	1.6	3.7
—Winter	8	2.5	0.9	1.6
Forming Room—Summer	5	2.2	1.4	2.0
—Winter	7	5.9	1.9	3.5
Starting Room—Summer	5	1.3	Tr.	0.5
—Winter	7	4.4	Tr.	2.0
Storage Room—Summer	1			2.0
Pouncing Room—Summer	2	1.0	0.4	0.7
Miscellaneous (dyeing, drying, sizing, shrinking)	6	0.9	0.0	0.2
Finishing Room (front shop)	6	Tr.	0.0	Tr.

The highest concentrations were found in the blowing and forming rooms, but the worst conditions were in a poorly ventilated blowing room. When this was improved by separating the storage room from the blowing room proper and improving the general ventilation of the latter room, substantially lower concentrations were found. In both the other plants, the highest mercury vapor concentrations were found in the forming room.

These measurements were all made with the lamp-shade type mercury vapor detector and covered periods of from 5 to 7 hours. Additional samples were taken by a condensation method in some cases. The concentrations of mercury found, with the correspondending values obtained by the lamp detector, are shown in Table V.

Table V. Comparison of Lamp-Shade Detector and Dry Ice Condensation

Process		Number Samples		Average Concentration	
		Condensation	Detector	Condensation	Detector
Forming Room	(a)	1	2	2.8	4.7
	(b)	1	1	7.5	3.8
	Average	2	3	5.2	4.3
Starting Room	(a)	2	1	3.1	2.3
	(b)	4	2	1.4	2.8
	(c)	3	2	0.8	2.5
	Average	9	5	1.8	2.5

It is seen that higher concentrations were obtained, as a rule, with the lamp-shade detector than by the condensation method. While individual discrepancies might be due to the fact that the different tests never corresponded exactly as to time and location, the differences are too uniformly in the same direction to be entirely explained in this manner. It is possible that either the lamp-shade papers were invariably read too high, or that the absorption of mercury vapor was incomplete. In any case, no evidence of the presence of the vapor of mercury compounds, which would not be determined by the lamp method and which has been reported elsewhere, was found.

As a further check on the presence of the vapor of mercury compounds, samples were taken in fritted glass bubblers, using water as the absorbing medium. Vapors of mercury nitrate, chloride or any other water soluble salt should be absorbed quantitatively by this method. The results obtained are shown in Table VI.

Table VI. Concentrations of Water Soluble Mercury Compounds in Air

Process	Number Samples	Mercury Found (Milligrams Per 10 Cubic Meters)
Starting (1)	3	None
(2)	2	0.05
Forming	1	0.1
Dyeing	1	0.07

It is seen then that the quantities of mercury found are very small in comparison with those obtained by other methods, but there is indication of the presence of volatile combined mercury in the air in some cases.

Analysis of the water in which the hat bodies are dipped, and drainings from wet bodies, disclosed considerable quantities of mercury in all cases, concentrations ranging from 0.1 to 0.75 mg. per 100 cc. of water in one plant, and from 0.3 to 0.7 mg. in another plant. The possibility of absorption of mercury through the skin, from contact with water containing mercury, has been considered, but probably no definite conclusion can be reached without actual experimental work. It seems most likely, however, that the chief avenue of mercury absorption is the respiratory tract.

Urinary mercury determinations were made on those groups of workers who apparently had the most severe mercury exposures. These were made by oxidizing the urine by means of chlorine in acid solution, then electroplating the mercury directly onto a copper wire, distilling off the mercury into a capillary tube and measuring the size of the droplet obtained, after the method of Stock. While somewhat tedious and difficult, this method is absolutely positive for mercury, in contrast to some of the methods frequently used. The results of the urine analyses are summarized in Table VII.

Table VII. Urinary Mercury Concentrations

Operation	No. Samples Analyzed	Mercury Concentrations (Milligrams Per Liter)		
		Minimum	Maximum	Average
Blowing, mixing — Summer	6	0.19	1.20	0.55
— Winter	9	0.18	0.85	0.59
Coning — Summer	3	0.03	0.47	0.21
— Winter	12	0.24	2.73	1.13
Hardening — Summer	4	0.16	0.61	0.29
— Winter	11	0.34	2.05	0.93
Starting — Summer	11	0.01	0.93	0.43
— Winter	16	0.05	1.77	0.61
Miscellaneous — Summer	10	0.01	0.36	0.10
— Winter	6	0.01	0.23	0.13

The seasonal variation in urinary mercury is seen to be consistent with that of atmospheric mercury. In the blowing room there is very little difference between winter and summer; in the starting room the winter concentrations are definitely higher, while in the case of forming room workers (coners and hardeners), the winter concentrations are strikingly higher. Though the number of summer samples from workers in this room is unfortunately small, the fact that the maximum concentration found was in each case well below the average winter concentration is certainly significant.

Among the miscellaneous operations, the highest urinary concentrations were found in an A machine operator (0.36 mg. summer), a B machine operator (0.24 mg. summer) and a dyer (0.23 mg. winter). Of the other workers (pouncers, stretchers and blockers, Mezzera machine operators), none showed a concentration above 0.2 mg. of mercury per liter of urine.

Of fundamental interest is the relationship of the excretion of mercury to the amount inhaled. In Table VIII the ratios of urinary and atmospheric mercury concentrations are shown.

Table VIII. Comparison of Urinary and Atmospheric Mercury Concentrations

Operation	Season	Urinary Mercury (U)	Atmospheric Mercury (A)	Ratio U to A
Blowing Room	Summer	0.55	2.1	0.26
	Winter	0.59	1.6	0.37
Coners	Summer	0.21	2.1	0.10
	Winter	1.13	4.0	0.28
Hardeners	Summer	0.29	2.1	0.14
	Winter	0.93	4.0	0.23
Starters	Summer	0.43	0.5	0.86
	Winter	0.61	2.0	0.30

We find that, for all operations in winter and for blowing room workers in summer, the urinary mercury excretion is between 25 and 40 per cent of the mercury vapor content of 10 cubic meters of the air inhaled. The summer value for coners and hardeners falls below this range, while that for starters is well above it. Unless there are special factors affecting these operations, it is probable that further studies would show ratios for them more nearly of the average value.

The threshold concentration for atmospheric mercury has been tentatively set at 1 mg. per ten cubic meters of air. For urinary mercury no value is generally accepted. The final report of the study made in Connecticut is expected to produce definite standards for both these measures of mercury exposure. Meanwhile, the establishments in the Commonwealth are steadily improving conditions in those departments involving the greatest hazard of mercury poisoning.

Benzol

Urine Analysis.—A method alternative to the determination of dust or vapors in the air, i.e. the measurement of the concentration of noxious material which is being inhaled, is the measurement of the amount of the substance or its reaction products which are being eliminated by the workers involved. This cannot always be done, of course, but with three important industrial poisons, benzol, lead and mercury, analysis of the urine of exposed persons provides valuable information as to the degree of the hazard.

A total of 181 urine samples obtained from industrial workers and analyzed for evidence of the presence of benzol, lead, mercury and trichlorethylene are classified in Table IX.

Table IX. Summary of Urine Analyses

Type of Work	Number of Samples Analyzed			
	Benzol	Lead	Mercury	Trichlor-ethylene
Artificial Leather Worker	42			
Rubber Cementing	9			
Printing	6	19		
Soldering		7		
Painting		3	2	
Felt Hat Mfg.			59	
Metal Degreasing				3
N. O. C.	17	7	7	
Total	74	36	68	3

The chief advantage of urine analysis over atmospheric determinations is that variations in the worker's environment too irregular to correct for are automatically brought to light. The degree of absorption through channels other than the respiratory tract is also indicated.

The main disadvantages of urine examination are that (1) the source of the hazard is not shown and (2) the results of any single analysis cannot be completely relied on, since many unknown factors affect the excretion of toxic materials. The latter difficulty is best overcome by taking samples from several workers on the same job, or by obtaining several from the same worker. The source of the exposure may sometimes be indirectly deduced or obtained by mere observation, but usually it can best be found by atmospheric analysis.

Urine analysis cannot, then, completely replace air analyses, but may in some cases be a partial substitute and in others a valuable supplement.

The Urine Sulfate Test.—The excretion of benzol through the urinary tract is measured indirectly, by determining the ratio of inorganic sulfates to total sulfates in the urine. As benzol is excreted largely in the form of organic or ethereal sulfates, the ratio of inorganic to total (i.e. inorganic plus organic) sulfates will be reduced if there has been any benzol exposure.

As the data available on this test did not indicate a close correlation between the urine sulfate ratio and the concentration of benzol vapor in the air, a series of determinations involving both air and urine analyses was carried out. These tests were made in plants where relatively good control was maintained, no area being found where the average benzol concentration greatly exceeded 100 p. p. m. On the whole, there is a very good correlation between the two methods. The average ratios for the different exposure groups are shown in Table X.

Table X. Benzol Exposure and Urine Sulfate Ratio

Group	Benzol Exposure (p.p.m.)	Number of Tests	Average Ratio (per cent)
I	0	8	86
II	0-40	6	81
III	40-75	11	61
IV	75-100	11	42
V	100-125	9	34

The benzol exposure was as a rule obtained by averaging the results of all vapor determinations made in the given worker's area. This was in a few cases corrected by adding or subtracting 10 to 20 per cent where it was known that the job included operations with a greater or less exposure than that measured. Though the degrees of benzol exposure are probably not quite as definitely known as is indicated in this table, repeat tests in a given room under similar conditions duplicated the average concentrations closely, even though individual air samples varied considerably.

While the great majority of urine samples were taken near the end of the working day, after at least six hours of benzol exposure, a few tests were made on samples obtained in the late forenoon. A comparison of morning and afternoon test results is shown in Table XI.

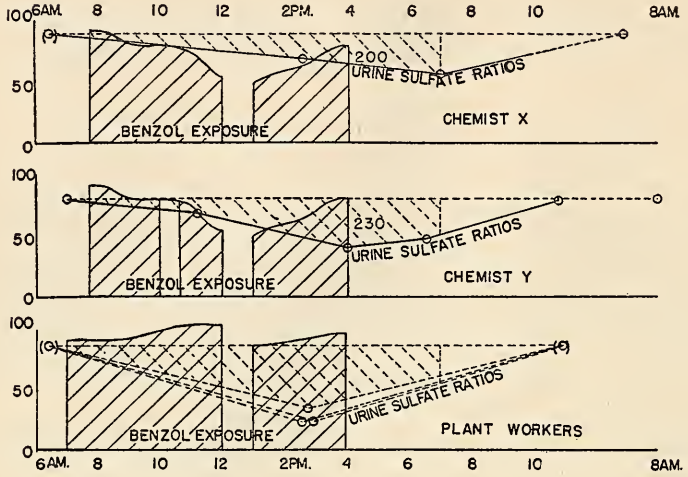
Table XI. Comparison of Forenoon and Afternoon Urine Sulfate Ratios

Worker	Benzol Exposure (p.p.m.)	Urine Sulfate Ratio, %		
		A.M. (A)	P.M. (P)	A less P
1	60	88	59	29
2	45	77	49	28
3	over 80	51	52	-1
4	100	72	37	35
5	100	62	38	24
6	less than 75	78	56	22
7	70	68	40	28

It is seen that the time of day at which the sample is taken is very important. In every case except that of worker 3, the ratio of the afternoon sample was over 20 per cent lower than that of the forenoon sample. The exposure of worker 3 was highly irregular and might easily have been very high before the first sample was taken and much lower during the latter part of the day.

The remarkable difference in forenoon and afternoon samples caused question as to the effect of the previous day's exposure on the sulfate ratio. Accordingly, a member of the staff and an assistant spent nearly a full day in an artificial leather plant taking air samples. Urine samples were collected over a 24-hour period and the sulfate ratios determined. The results of this study are shown in Figure 2.

Fig. 2. Variation of urine sulfate ratio with time of day, relative to exposure period



It is seen that subject X, who had an average exposure of about 80 p.p.m. from 7.45 to 12.00, 60 p.p.m. from 1.00 to 2.30 and 80 p.p.m. from 2.30 to 4.00, showed sulfate ratios of 69% at 2.30 and 55% at 7.00 p. m., with 88% at 7.00 a. m. the following day. Subject Y, whose exposure was slightly less, showed ratios of 79% at 7.00 a. m., 68% at 11.15, 40% at 4.00 p. m., 46% at 6.30 p. m., 79% at 10.45 p. m., and 79% at 8.00 a. m. the next day. In other words, the sulfate ratio returns to normal shortly after the exposure ceases.

The area between the curve of sulfate ratio and the line representing the normal ratio is 200 units for subject X and 230 for subject Y, a fair check, although Y's exposure was about 10 per cent less than that of X. Subject Y's ratio before and after exposure was slightly below the normal value, but it is not believed that this fact affects the results in any material way.

From this evidence we are forced to conclude that the day of the week on which the sample is taken is of little importance, while the time of day with relation to the benzol exposure is of great significance.

According to Schrenk, persons with liver damage do not react normally to benzol exposure. We found one case where a worker in a moderately high benzol vapor concentration showed a high sulfate ratio (97 per cent). Another worker in the same plant showed a very low ratio (40 per cent), considering the exposure. Samples taken four months later showed that each reacted normally (ratios of 71 and 82 per cent, respectively), indicating that the previous physical conditions of the workers were temporary ones.

Cobbler Shops.—The death of a cobbler employed in a shop in Greater Boston with symptoms of benzol poisoning led to a study of the use of benzol cements in such shops. It was found that, at the shop in question, benzol and naphtha cements were used interchangeably for the commonest cementing processes. The average consumption of cement was about a gallon a month. As the shop was fairly well ventilated, the average concentration of benzol vapor inhaled by the worker must have been very small, certainly less than 25 parts per million parts of air.

Seventy-one other cobbler shops in Greater Boston were visited and information as to the use of benzol cements was obtained. As shown in Table XII, it was found that in relatively few of the shops was there any important use of benzol.

Table XII. Use of Benzol Cements in Cobbler Shops

Shops visited	71
Shops using benzol cements	29
Shops using over 1 pint of benzol cement per week	14
Estimated total consumption of benzol cements	242 gal. per year
Number of workers directly exposed	45
Average consumption of benzol cement per worker exposed	5.4 gal. per year
Maximum consumption of benzol cement per worker exposed	26 gal. per year

These quantities are very small in comparison with those handled in most industrial processes involving benzol, and the existence of a serious benzol hazard in such shops might be questioned on this ground alone. Confirmation of this conclusion was obtained by obtaining the urine sulfate ratio of four workers in three shops which were among the largest users of benzol cements. The results of these determinations are shown in Table XIII.

Table XIII. Urine Sulfate Ratios of Cobblers Using Benzol Cements

Shop	Worker	Yearly Consumption Benzol Cement (gallons)	Urine Sulfate Ratio (per cent)
A	1	26	82
B	2	26	85
	3		86
C	4	15	82
Average			83.8

As any value over 80 per cent is considered normal, and significant benzol exposure is not indicated unless the ratio is below 70 per cent, it cannot be said that evidence of a benzol hazard was found. The average urine sulfate ratio of about 84 per cent was below the normal average (86 to 89 per cent), however, and this is probably an indication of slight benzol absorption. It is possible that the fatal case referred to involved in some way an exceptionally high benzol vapor exposure, but it seems more likely that the most important factor was an unusual degree of susceptibility.

While the benzol hazard in cobbler shops is apparently not great, and engineering control is not called for, there is in most cases a complete absence of medical supervision. The elimination of benzol cements from this trade is, therefore, to be hoped for. While it is believed that the educational program carried out as a part of the survey, in which the toxic character of benzol was explained to the proprietors of all the shops visited, has contributed materially to this end, it is obviously impractical to reach all such establishments. The complete co-operation of manufacturers of these cements is necessary if benzol is to be eliminated from the shoe repairing business.

Paint Removers.—Another suspected benzol fatality, that of a telephone operator who occasionally used a small amount of paint remover containing benzol in the course of her work, was brought to the attention of the division. Because the paint remover in question bore no warning label in accordance with the benzol labeling law, and because of the obviously widespread exposure to paint remover, the composition of many of the paint removers in use by commercial painters was determined and information as to the quantities used was also obtained.

As is shown in Table XIV, the majority of the paint removers were found to contain benzol.

Table XIV. Composition of Paint Removers

	Number of Brands	Number of Concerns	Workers Exposed	Gallons Used Annually	
				Total	Per Worker
Contained benzol; legally labeled . . .	16	26	211	1,166	5.5
Contained benzol; not labeled . . .	10	11	45	177	4.0
Benzol free . . .	9	7	10	40	4.0

It is clear from these data that, while the majority of painters who use paint removers are exposed to benzol, their average contact with this solvent is not excessive. This infrequent use of paint removers by the average painter probably explains the absence of benzol poisoning cases in the trade. Undoubtedly there are occasional painters who do work with paint removers for relatively prolonged periods, and in such cases benzol poisoning is a distinct possibility.

The benzol content of these products was found to vary from 30 to 60 per cent. The removers which were benzol free were of two types. One of these was the paste type, in which the solvent in all cases contained toluol, and methanol was frequently present. Both these solvents are toxic, but are believed to be much less dangerous than benzol. Not all of the paste and semi-paste paint removers were benzol free, however.

The second benzol free type was the non-inflammable remover. All samples of this type which were examined were found to contain methylene chloride, of varying degrees of purity. Such removers were sometimes advertised as harmless. Since methylene chloride, like all the chlorinated hydrocarbons, is a strong narcotic poison and may injure the liver, these claims are entirely unjustified. However, there is little doubt that their use involves less of a health hazard from chronic poisoning than does the use of the benzol removers, although the chances of acute poisoning may be fully as great.

Care should be taken when using paint removers indoors to keep doors and windows open as much as possible, and no worker should be exposed to the fumes from a benzol paint remover oftener than once a week.

Determination of Lead Fumes

The most convenient device for collection of particulate matter from the atmosphere for chemical determination is the impinger, the apparatus used exclusively for this purpose by the division until recently. For very fine particles, such as metallic fumes, the efficiency of collection by this method is, however, not always high. A recent Bureau of Mines study reported that with lead fumes, freshly prepared by burning lead tetraethyl, the impinger collected only from 25 to 60 per cent of the total amount present.

Since the fumes given off by heated lead are one of the most important sources of lead poisoning, the ability to measure such fumes accurately is obviously essential. It seemed possible, however, that the lead fume from a pot of molten lead would differ somewhat from one formed by burning an organic lead compound. A series of tests was carried out, therefore, in which the amounts of lead fume in the air, made by heating metallic lead (in some cases lead alloys) were measured both by means of the impinger, operated both singly and with two in series, and with the electric precipitator, a device known to be highly efficient.

The results of these tests are shown in Table XV.

Table XV. Efficiency of Impinger for Lead Fumes

Source of Lead Fume	No. Tests	Air Flow Through Impingers	Per Cent of Lead Present Collected in Impingers (Avg.)		
			1st	2nd	Total
Lead at red heat	3	1.0 c.f.m.	46	—	46
" " " "	7	1.6 c.f.m.	78	—	78
" " " "	3	1.0 c.f.m.	40	37	77
" " " "	3	1.35 c.f.m.	49	36	85
Type metal	1	1.35 c.f.m.	37	42	79
Large area of molten lead	8	1.35 c.f.m.	40	33	73
Heated bronze	2	1.35 c.f.m.	50	25	75

It is seen that, at the normal rate of sampling, or even at a substantially higher rate (1.35 c. f. m.), a single impinger was found to collect on the average less than half the total quantity of lead present in the air. When the rate of sampling was increased to 1.6 c. f. m., however, substantially better results were obtained. Similarly, the use of a second impinger, in series with the first, improved the efficiency of collection to about 75 per cent. Both water and sodium hydroxide solutions were used as the collecting media in the impinger flasks in the above tests. The same results were obtained with both solutions. Some experiments were also made using 10 to 15 per cent nitric acid in the impinger flask. With low lead concentrations, the nitric acid solution seemed to be more efficient than pure water, but with higher concentrations no difference was observed.

In several studies of lead fume concentrations in industry, samples have been taken with two impingers in series and the contents of each flask have been analyzed separately. Some results obtained in this manner are shown in Table XVI.

Table XVI. Double Impinger Samples in Various Industrial Processes

Industry	Source of Lead Fume	No. Tests	Lead Concentration	Per Cent of Lead Found in 1st Impinger (average)
Lead smelting	Lead casting	4	Medium	90
Printing	Lead casting	1	Low	78
Machinery mfg.	Heat treating	2	Low	27
Rubber goods	Soldering	2	Very low	40

Most of these samples were taken at 1 cubic foot per minute. We see that, in several cases, considerably more lead was found in the second impinger than in the first, a result never found in the laboratory studies.

In summary, it may be said that freshly generated lead fume prepared by heating lead or lead alloys is very inefficiently absorbed by a single impinger at the standard rate of sampling. In most cases, the use of a second impinger in series with the first will improve the collection substantially, but for completely reliable results an electric precipitator should be used.

Summary

The work of the survey has again had the wholehearted co-operation of the industries visited and the assistance accorded to its furtherance is acknowledged with appreciation. Visits to factories in connection with the survey totaled 132, field determinations of fume and dust concentrations 307 and laboratory determinations 762.

Other Activities

Members of the staff have again been called upon for various activities beyond the routine and special work already noted. These have included services of an educational nature, response to invitations to participate in the deliberations of other organizations, the delivery of a number of public addresses and the work incident to membership in several committees.

Educational Co-operation.—The program of co-operation with the Harvard School of Public Health this year included a lecture on air analysis and the conduct of six laboratory meetings by the division's chemist. Students from other states were accompanied on five visits to industrial plants, insurance laboratories and other governmental agencies. Substantial amounts of printed matter have again been distributed.

Participation in Related Activities.—Greater Boston gatherings participated in by members of the staff have included meetings of the Boston Health League, the Massachusetts Central Health Council, the Massachusetts Public Health Association, the New England Industrial Hygiene Seminars, the American Tuberculosis Association, the Engineering Section of the Massachusetts Safety Council, the works physicians of the General Electric Company, the medical staff of the American Mutual Insurance Company, the New England Health Education Institute, the annual Massachusetts Safety Conference and a conference on benzol poisoning held at the division's office with representatives of the New York State Department of Labor, the Connecticut Department of Health, the Metropolitan Life Insurance Company and the Massachusetts General Hospital. Out of town meetings attended include the Fourth Saranac Laboratory Symposium on Silicosis, Saranac Lake, N. Y., the Konicide Club, Philadelphia, the Rhode Island Medicolegal Society, Providence, the American Industrial Hygiene Association, Cleveland, the American Standards Association, New York City, and the Air Hygiene Foundation of America, Pittsburgh. Conferences relative to the work of the division were attended at the offices of the Metropolitan Life Insurance Company and the New York State Labor Department, New York City, and the Emark Battery Division of Thomas A. Edison, Inc., Kearney, N. J.

Speakers on various phases of occupational hygiene were furnished to meetings of the Engineering Section of the Massachusetts Safety Council, the Massachusetts Central Health Council, the Rhode Island Medicolegal Society, the American Industrial Hygiene Association, the New England Industrial Hygiene Seminars and the 18th Annual Massachusetts Safety Conference.

The division is represented on the Committee on Standard Practices in the Problem of Compensation of Occupational Diseases and the Subcommittee on Chemical Methods of Air Analysis of the Committee on Standard Methods for the Examination of the Air of the American Public Health Association, the Committee to Study Methods for Securing Effective and Uniform Reporting of Occupational Diseases and Other Illnesses Among Workers and the Subcommittee on Regulatory Standards of the Committee on Industrial Health Codes of the Conference of Governmental Industrial Hygienists, the Sectional Committee on Standard Allowable Concentrations of Toxic Dusts and Fumes of the American Standards Association, the Committee on Occupational Hygiene of the Boston Health League and the Board of Directors of the Massachusetts Central Health Council.

M. M. S. Committee on Industrial Hygiene.—Recognizing the need of more direct attention to the problems of industrial health, the American Medical Association has established a Council on Industrial Medicine and this body has in turn urged upon the state medical societies appointment of committees to deal with this subject within their own jurisdictions. The invitation extended to the division's director by the Massachusetts Medical Society's Committee on Industrial Hygiene to participate in its deliberations may be expected to inaugurate a relationship of great value to this agency. Members of the committee, which held its first meeting in Worcester on September 20th, are Dr. W. Irving Clark, chairman, Norton Company, Worcester, Dr. Louis Daniels, Hood Rubber Company, Watertown, and Dr. Noel G. Monroe, Boston Edison Company, Boston. Additions to the membership are anticipated.

Co-operating Chemical Manufacturers.—No single means of forestalling industrial disease incident to the use of potentially toxic chemical substances could well be a more valuable supplement to the division's efforts than the assistance voluntarily and generously given by a number of manufacturers of industrial

chemicals and equipment who have furnished information of a nature usually held confidential with regard to the composition of their products and their use in this state. The companies thus co-operating with the division now number twelve. Our appreciative acknowledgment is extended to:

Barrett Company, New York, N. Y.
Dow Chemical Company, Midland, Mich.
Great Western Electro-Chemical Company, San Francisco, Cal.
Halowax Corporation, New York, N. Y.
Monsanto Chemical Company, St. Louis, Mo.
Celanese Corporation of America, New York, N. Y.
Trubenizing Process Corporation, New York, N. Y.
E. I. DuPont de Nemours & Company, Wilmington, Del.
Metallizing Company of America, Chicago, Ill.
Metallizing Engineering Company, Long Island City, N. Y.
Metals Coating Company of America, Philadelphia, Pa.
Pyrrole Products Corporation, Portsmouth, Ohio

Publications.—Publications during the year by the division or members of its staff, chiefly bulletins of an educational or advisory nature, have been:

1. "Publications, 1938." List, 1 p.
2. "Publications, 1936." List, 1 p.
3. "A Study of Fur Cleaning." Bulletin, 1 p.
4. "Mechanical Filter Dust, Fume and Mist Respirators Approved by the U. S. Bureau of Mines." List, 1 p.
5. "Benzol Cements." Bulletin, 1 p.
6. "Report of the Division of Occupational Hygiene for the Year Ending Nov. 30, 1937." 27 pp.
7. "Important Reference Volumes." List, 1 p.
8. "The Law Relative to Reports by Physicians of Cases of Occupational Disease." Reprint, 1 p.
9. "Major Items of Technical Equipment." List, 1 p.
10. "Important References in the Literature of Occupational Hygiene." List, 2 pp.
11. "Mechanical Filter Dust, Fume and Mist Respirators Approved by the U. S. Bureau of Mines." Illustrative bulletin, 1 p.
12. "A Helpful Service to Industry." Bulletin, 1 p.
13. "Periodicals." List, 1 p.
14. "The Eighteenth Annual Massachusetts Safety Conference." Bulletin, 1 p.
15. "An Act Establishing a Division of Occupational Hygiene in the Department of Labor and Industries and Defining its Powers and Duties." Reprint, Chapter 331, Acts of 1934, 1 p.
16. "Provisions of the General Laws Relative to the Health of Industrial and Mercantile Workers." Reprint from Chapter 149, General Laws, 2 pp.
17. "Decomposition of Halogenated Hydrocarbon Vapors by Smoking." Reprint from Journal of Industrial Hygiene and Toxicology, June, 1939, 5 pp.
18. "Prevention of the Ill Effects of Heat." Bulletin, 1 p.
19. "Health Hazards from Paint Removers." Bulletin, 1 p.
20. "Mechanical Filter Dust, Fume and Mist Respirators Approved by the U. S. Bureau of Mines." List, 2 pp. (Supersedes No. 4)
21. "Industrial Vacuum Cleaning." Bulletin, 1 p.
22. "Air-line Respirators and Abrasive Blasting Helmets Approved by the U. S. Bureau of Mines." List, 1 p.
23. "Toxic Fumes in Massachusetts Industries." Reprint from Industrial Medicine, October, 1939, 6 pp.
24. "Chronic Exposure to Benzene (Benzol). I. The Industrial Aspects." Reprint from Journal of Industrial Hygiene and Toxicology, October, 1939. 10 pp.

24A. "Chronic Exposure to Benzene (Benzol). I. The Industrial Aspects." Reprint from Journal of Industrial Hygiene and Toxicology, October, 1939, Bound with Parts II. The Clinical Effects, III. The Pathologic Results, 73 pp.

25. "Cloth Filter Dust Collectors." Bulletin, 1 p.

Summary of Field and Laboratory Work

Hazardous Concentrations Found.—Consideration of the hazardous concentrations of industrial fumes and dusts brought to light by the year's field and laboratory work is of interest in summarizing these activities. Table XVII lists the operations studied in both routine and survey work and indicates the number and per cent of hazardous concentrations of toxic materials found therein. The latter figures should be read with the understanding that they are based upon the maximum allowable concentrations established by the department's Dust and Fume Code Committee (see p. 17, 1938 report) in May, 1938, and that, for the purposes of this tabulation, the factor of continuous or periodic exposure has been ignored. Without attempting to read any significance into the comparison, it is perhaps worth noting that the hazardous concentrations found in 1937 were 47 per cent of all concentrations measured, in 1938 37 per cent and in 1939 31 per cent.

Table XVII. Hazardous Concentrations Found

Operation	Atmospheric Contaminant	Number Samples	Hazardous Concentrations Number	Hazardous Concentrations Per Cent
Automobile repairing	Carbon monoxide	154	10	7
Battery plate pasting	Lead	3	2	67
Brass pouring	Lead	6	6	100
Condenser impregnating	Chloronaphthalene	5	1	20
Condenser soldering	Chloronaphthalene	1	0	0
Dope, lacquer mixing	Benzol	43	29	68
	Inflammable vapor	6	1	17
Dope mixing	Toluol	1	0	0
Electroplating	Cyanide	19	7	37
Enamel dipping	Naphtha	7	2	29
Fabric coating	Benzol	10	0	0
	Total vapors	4	0	0
Fabric printing	Toluol	4	1	25
Felt hat dyeing	Mercury	1	0	0
Felt hat forming	Mercury	5	5	100
Felt hat starting	Mercury	13	11	85
Foundry work, dusty, N.O.C.	Silica dust	31	12	39
Fur blowing	Mercury	8	7	88
Fur cleaning	Carbon tetrachloride	1	0	0
Fur feeding	Mercury	3	3	100
Gas burner operation	Carbon monoxide	1	0	0
Lacquer dipping	Toluol	2	0	0
	Total vapors	2	0	0
Lacquer spraying	Toluol	8	0	0
	Total vapors	15	2	13
Lacquering	Benzol	6	3	50
Lead burning	Lead	3	3	100
Lead casting	Lead	40	17	42
Lead cutting	Lead	4	0	0
Lead grinding	Lead	2	1	50
Leather japanning	Naphtha	41	17	42
Metal degreasing	Trichlorethylene	16	9	56
Monotype casting	Lead	2	2	100
Multigraphing	Carbon tetrachloride	4	1	25
Orifice testing	Carbon tetrachloride	2	1	50
Paint spraying	Lead	2	0	0
Paper coating	Amyl acetate	2	0	0
	Toluol	4	0	0
	Total vapors	2	0	0
Photoengraving	Benzol	8	0	0
Plastic molding	Formaldehyde	3	0	0
	Phenol	3	—	—
Plate molding	Lead	3	3	100
Rock drilling	Silica dust	3	2	67
Rubber cement mixing	Naphtha	10	1	10
Rubber cementing	Benzol	8	2	25
	Naphtha	12	3	25
Rubber fabricating	Talc dust	2	0	0
Soldering	Lead	6	1	17
Steel carbonizing	Cyanide	1	0	0
Steel hardening	Lead	9	4	45
Tape impregnating	Methanol	2	0	0
Tea mixing	Organic dust	4	0	0
Varnish dipping	Inflammable vapor	11	1	9
	Naphtha, toluol	4	3	75
Wood heel covering	Methanol	4	4	100
Wool degreasing	Trichlorethylene	4	2	50
Total	All	580	179	31

A condensed summary of the year's field and laboratory work is offered in Table XVIII.

TABLE XVIII. CONDENSED SUMMARY OF FIELD AND LABORATORY WORK

		Routine Work	Field Studies, Surveys	Laboratory Studies	Total
Visits to Plants		326	302	—	628
Field determinations		316	307	—	623
Acetone	2				
Ammonia	1				
Amyl acetate	6				
Benzol	77				
Carbon monoxide	155				
Carbon tetrachloride	7				
Chloronaphthalene	6				
Cyanide	24				
Formaldehyde	3				
Lead	82				
Mercury	38				
Methanol	6				
Naphtha	85				
Organic dust	4				
Phenol	3				
Silica dust	36				
Toluol	25				
Trichlorethylene	20				
Vapors, N.O.C.	43				
Laboratory determinations		855	762	453	2,070
Total determinations		1,171	1,069	453	2,693

REPORT OF THE MASSACHUSETTS DEVELOPMENT AND INDUSTRIAL COMMISSION

Powell M. Cabot, *Chairman;* Arthur L. Race, Joseph H. Burke, John J. Kearney, Edgar J. Arcand, Commissioners. Ex officiis, James T. Moriarty, *Commissioner of Labor and Industries;* William Casey, *Commissioner of Agriculture.*

Bernard J. Doherty, *Secretary.*

The Massachusetts Development and Industrial Commission, established under chapter 427 of the acts of 1937, submits its annual report for the fiscal year ending November 30, 1939.

Definite and pre-planned programs have been followed in endeavors to increase recreational volume and revenue and in promoting industry. Assistance to agriculture has not been preplanned but has been extended as need and occasion arose and upon the recommendations of the Commissioner of Agriculture and his advisory committee.

The scheduling of advertising as far as is compatible with the objectives, has been arranged to provide advertising of some nature for Massachusetts the year around.

RECREATIONAL PROMOTION

In round numbers, two million visitors to Massachusetts spend approximately $200,000,000 here annually. The majority are summer visitors, of which the greater part come by automobile. There is, in addition, an increasing influx of visitors during the winter sports season and during the spring and fall fishing season. A check of automobile licenses indicates that proportionately more visitors come from the nearer states (excluding New England) such as New York, Pennsylvania and New Jersey. The program of advertising sponsored by the Commission has been based upon these facts, with the major expenditure devoted to attracting summer visitors.

The recreational development activities of the Commission consisted of the following:

Advertising in selected national magazines, Metropolitan newspapers and in a few small publications
Use of a limited number of outdoor boards; production and distribution of literature
Release of publicity material and sponsorship of broadcasts
Establishment of tourist information booths
Miscellaneous activities, including attendance at various meetings, complimentary tours, etc.

Advertising

Partial pages in black and white were carried in *National Georgraphic, The Saturday Evening Post, Colliers's, American Legion Magazine, House and Garden* and *House Beautiful,* featuring the recreational advantages of Massachusetts, with special reference to the wide range of summer pleasures available, scenic, historical and health aspects, and comfortable, inexpensive accomodations. Adaptions of the same advertisements were carried on resort pages and principally in Sunday issues of the following newspapers:—*New York Times, New York Herald-Tribune, New York Journal & American, Brooklyn Eagle, Buffalo Courier Express, Philadelphia Inquirer, Philadelphia Record, Pittsburgh Sun Telegraph, Pittsburgh Press, Washington Post, Washington Star, Washington Herald-Times, Cleveland Plain Dealer, Cincinnati Enquirer, Detroit Free Press, Detroit News, Chicago Tribune, St. Louis Post Dispatch, Montreal Star, Toronto Star Weekly* and the New England edition

of the *Christian Science Monitor.* All advertisements, both in newspapers and magazines, contained coupons offering literature and further information on request. All advertisements were keyed so that results could be checked.

Seventeen painted outdoor boards were contracted for a period of six months, beginning April first. These were located on highways in Connecticut, New Jersey and New York leading towards New York City. The purpose was to encourage visitors to the Fair to include Massachusetts in their tours.

Because of the early opening of the New York World's Fair and the likelihood of attracting Fair visitors to Massachusetts, advertising was begun in late March, a month earlier than has been the previous practice. Advertising reached its peak in May and June and was tapered off in July and August.

Winter sports were advertised on resort pages of the following newspapers: *New York Times, New York Herald-Tribune, New York Journal* and *American, New York World Telegram* and *Brooklyn Eagle.* One page was carried in the *National Ski Annual.* The first insertion was placed in special resort sections issued in December. The second insertion was held until favorable weather conditions were general in Massachusetts' winter resort areas. A third insertion was prepared but not run because weather conditions during February were not favorable.

Advertisements concerning fishing in Massachusetts, particularly surf and salt water, were carried in *National Sportsman* and in *Hunting and Fishing* in April, preceeding the spring fishing season and again in September, preceding the fall season. Four 6-inch insertions were carried in *Salt Water Sportsman,* a new Massachusetts publication. It is estimated that about one million sportsmen were reached in this way at each of the two seasons.

Through the courtesy of the Associated Industries of Massachusetts, a considerable portion of the July issue of *"Industry"* was devoted to recreation as an industry in Massachusetts and the Commission carried a page advertisement in the New Haven Railroad recreation booklet.

The total number of recreational advertising messages, calculated from the sworn circulation of magazines and newspapers used, was 54,784,000. This does not include billboards or publicity.

The Commission prepared 650,000 two-color illustrated folders. These, with the remainder of booklets left over from the preceding year, were used for distribution at the World's Fair, for mailing in reply to individual inquiries and for quantity supply to Chambers of Commerce, travel bureaus, tourist booths, conventions and exhibits.

All told, the Commission in 1939 distributed 680,420 pieces of recreational literature and made 33,988 individual mailings to persons in every part of the United States, Canada, Europe, and Latin America.

Of the inquries received, 16,267 were traceable to magazine and newspaper advertising. Approximately 13,000 of these inquiries resulted from summer vacational advertising, the remaining 3250 derived from the spring and fall advertising on salt water fishing and winter sports. The Berkshire Hills Conference reported capacity crowds every week-end when weather conditions were favorable. Reports of increased sales of fishing equipment and boat hire were received by the Commission.

Inquiries requesting information about specific regions were referred for follow-up to regional bureaus as follows:

The Berkshire Council	1,323
Pioneer Valley Association	1,137
Cape Cod	1,905
South Shore	1,034
Boston Chamber of Commerce	1,550
North Shore (Gloucester Chamber of Commerce)	995
Total	7,944

In connection with the fishing advertising, copies of a bulletin for salt water anglers especially prepared for the Commission by *Hunting and Fishing Magazine,* were used in answering all inquiries received from the fishing advertising.

A directory of Tourist Camps in Massachusetts was issued, in connection with the Geodetic Division, W. P. A., and employed chiefly for distribution by tourist booths within the state.

A booklet, *Paradise for Winter Sports,* listing and describing ski trails and giving other winter sports information, was issued in two editions totalling 10,900 and employed in answering requests emanating from advertising and other sources.

Publicity

As nearly as can be estimated, the efforts of the Commission resulted in 59,000 lines of free publicity in newspapers, magazines and other publications.

The Boston Transcript and the Philadelphia Record ran free advertising for the Commission.

Material was supplied for seven broadcasts made at various places, none of which were in Massachusetts.

Photographs in limited number, of Massachusetts scenic and historical locations, have been supplied to travel agencies, magazine writers, lecturers and newspapers for articles on Massachusetts. Written material has also been supplied. Following are some of the publications which have used such aids:—

A. L. A. Magazine
The Young People
Staten Island Ad
Food Magazine
Fair and Vacation Travel Guide (T. W. A.)
Shell History and Tour Tips
Buick Magazine
Dodge News
Ford News
Tourist Guide of Conn. River Valley
Country Life
Sports Afield
A South American newspaper
Town Magazine
Various other magazines and newspapers in the United States and Canada

To one organization we supplied photos for use in making colored picture post cards. Photographs were supplied for publicity use to the Committee on "New England Days." Photographs and copy of the State Seal were supplied to the Hotel Lexington, New York and used in a permanent New England exhibit located in one of the hotel dining rooms.

Auto guest stickers to the number of 165,000 were supplied to Police Departments, Gasoline Filling Stations, Chambers of Commerce and other agencies for redistribution to tourists.

New York World's Fair

In order to capitalize upon the World's Fair to the extent of encouraging its visitors to include Massachusetts in their itineraries, the Commission as previously noted employed painted outdoor boards on main highways in New York, New Jersey and Connecticut leading to New York City. Mention of visiting Massachusetts en route to or from the Fair was made in newspaper and magazine advertising. In addition, 400,500 of the illustrated folders, *The Best of the Old with the Zest of the New,* were supplied for distribution at the Massachusetts exhibit at the Fair. These folders contained a special tie-up feature in the way of illustration to make them particularly suitable for use at the Fair. Other items and reference materials were supplied for the use of attendants at the Fair. The Commission further cooperated by getting organizations or bureaus within the state to supply literature of their localities.

Photos were supplied to the World's Fair Commission for making slides to be used in their World's Fair exhibit.

Information Booths

The Commission cooperated with the National Youth Administration in building seven information booths. The only expense to the Commission was $679.19 paid out for the construction materials and, of course, the cost of literature with which these booths were provided.

The booths were located at strategic locations through the cooperation of The Department of Public Works (Traffic Division). It is likely that one location will be changed before the 1940 tourist season. The Division of Roadside Beautification of the Department of Public Works aided in the planting of shrubbery around the booths. Members of the National Youth Administration staffed the booths. It is the opinion of the Commission that the service to the traveling public thus offered is decidely helpful and worthwhile not only to non-residents, but also to citizens of this Commonwealth.

The Commission also cooperated with organizations within the state by supplying reference material and by aiding those who were operating information booths for the first time.

The Commission furnished 245,932 pieces of literature to 681 travel bureaus, conventions and exhibits, located in 45 states, the District of Columbia, Canada and in some other foreign countries.

United States Travel Bureau

Close cooperation has been maintained with the United States Travel Bureau. A list of events in Massachusetts was published by the Washington Office. Literature was also supplied for their exhibits at both New York and San Francisco Fairs. Winter sports' photos and write ups were employed in their travel and recreational bulletin. They were provided with samples of all Commission photos, from which they supply magazines, newspapers and publicity agents. Large size photos were provided for traveling exhibits.

Work Progress Administration

Photographic negatives, prints and enlargements and some picture framing has been done for the Commission by The Art Project Division and the Geodetic Survey Division of W. P. A. The cost to the Commission was for materials used only.

Multigraph and multilith work for the Commission was done on a similar basis by W. P. A. This includes 3,000 copies of a list containing names and locations of persons who rent boats for sport fishing; 1,500 fishing bulletins, 500 lists of events, 5,000 directories of tourist camps, 200 lists of boat and canoe clubs, 500 lists of juvenile and adult camps, 100 reports of the mineral resourses of Massachusetts, 300 industrial pamphlets, 1,000 weekly report sheets for information booths, 800 forms for listing salt water fishing facilities, 2,000 forms for listing over-night cabins, 5,000 cards for industrial prospect files, and postcards for various purposes.

Conventions and Exhibits

The Commission cooperated with officials of the following twenty conventions during the year:

Disabled Veterans
Veterans of Foreign Wars
Abbott Dairies
Alpha Phi Pi
American Legion Auxiliary
Eastern Music Educators
Zontas
Massachusetts Tuberculosis League
Massachusetts Association of Colored Women
National Association of Insurance Agents
Massachusetts Association of Chiropodists

International Stewards and Caterers Association
Italian-American War Veterans
Kiwanis
Marine Corps League
National Conference of Planning
United Settlements of Greater Boston
White Shrine Convention
Wild Life Federation Convention
National Recreation Congress

A resolution passed by the National Convention of Kiwanis International was in appreciation of the cooperation received from the Commission. A similar resolution passed by the Western Massachusetts Winter Sports' Council commended the Commission for the publication of the first Massachusetts Guide to winter sports.

Miscellaneous

Lists of monthly events during the summer were published and distributed to newspapers, hotels and information booths.

Five radio broadcasts, in cooperation with Associated Industries of Massachusetts, were instituted, starting March 23rd. Radio time was donated by Station WEEI, Boston.

The Commission participated in the following exhibits:

Eastern States
Detroit Travel Show
Cincinnati Travel Show
Boston Winter Sports Show

Window displays were provided for Jordon Marsh, Boston, and *National Sportsman's Magazine,* Boston.

For the second year, the Commission sponsored an information center in the State building at the Eastern States Exposition, Springfield. The following organizations cooperated and had exhibits there during the summer:

Department of Agriculture
Department of Conservation
Cape Cod Chamber of Commerce
Massachusetts Hotel Association
Pioneer Valley Association
Department of Public Works
The Boston Port Authority

More than 1,700 persons stopped and signed the register during the summer; many more viewed the exhibit but did not sign the register. The exhibit was staffed by N. Y. A. and W. P. A. at no cost to the Commonwealth.

Photographs in one instance were supplied for the purpose of producing souvenir stationery. Literature was supplied to the White Star Line Steamship Company for distribution in Europe. Sporting goods stores in Massachusetts were supplied with winter sports booklets for distribution in their winter sports departments. Material for display in Florida was furnished to the New England Gas & Electric Company.

The Commission assisted in the celebration of Massachusetts Maritime Day.

The Commission in cooperation with the N. E. Council and the several N. E. states sponsored a complimentary trip to Massachusetts for the millionth visitor to the New England Exhibit at the New York World's Fair.

The Commission assisted in the preparation of literature for cooperative invitations to tourists issued by the six New England States through the Governor's Committee and the New England Council.

Duplicates of a slogan design, devised for use on metered outgoing mail from the State House and now regularly used, have been provided for use of banks and other institutions.

A survey made by the Commission in conjunction with the Department of Public Works and the Department of Conservation on the relative number of income of hotels, tourists' camps and over-night cabins indicates that resort hotel volume decreased slightly over 1938 and that volume of business for tourist camps and over-night cabins was up at least 15% over the previous year.

Records maintained at the seven N. Y. A. staffed information booths (Attleboro, North Adams, Auburn, Seekonk, Salisbury, Tyngsboro, and Andover) indicated that 22,735 cars containing 64,918 people stopped for information. Omitting cars from New England States, the greatest number of cars which stopped were in the following order for the first six states — New York — 3,472; New Jersey — 1,076; Pennsylvania — 897; Ohio — 367; Michigan — 350; Illinois — 330.

Comparative figures for gasoline sales in the State for 1938 and 1939 covering the months from April to October are significant in view of the large number of visitors which come to Massachusetts by automobile.

INDUSTRIAL PROMOTION

The purpose of the various industrial activities of the Commission has been; first, to influence industry outside the State to consider the advantages of producing in Massachusetts; second, to acquaint manufacturers within the state of the advantages they enjoy here.

Advertising

The principal effort of the Commission in behalf of industry has been through advertising carried in magazines which are known to have an excellent readership among industrial executives and through advertisements on the financial or business pages of certain large city newspapers which are noted for their financial and business news and reports and are therefore, read not only by industrial executives in the cities where the papers are issued, but also over wide surrounding industrial areas.

The magazines employed include *Fortune* and *Business Week*. Newspapers used include the *New York Times, New York Herald-Tribune, The Chicago Tribune, the Philadelphia Inquirer, The Pittsburgh Post Gazette, The Buffalo Courier Express, The Detroit News,* and *The Cleveland Plain Dealer.*

Industrial advertising was carried in January, being a continuation of the Campaign which extended through the fall and winter months of 1938. The advertising campaign was interrupted until October because of indecision over the future of the Commission's status and appropriation.

The number of industrial advertising messages calculated from the sworn circulations of publications used was 19,064,000.

Direct Mail

Letters were sent together with literature to 1,500 selected names of industrial executives supplied by *Fortune* & *Time* Magazines.

Literature

The booklet, "Industrial Advantages of Massachusetts", of which a limited supply was available from the previous year has been used in answering inquiries and for furnishing information generally. In the meantime, preparations have been made for producing new industrial literature early in 1940.

Special Follow-Up

The Commission during the closing weeks of November employed an industrial agent whose duties include the direct follow-up of leads offering an opportunity to induce new industry to come to Massachusetts or to dissuade any present industry within the state from moving elsewhere. It is the further duty of the industrial agent to make special studies which are pertinent to the work of the Commission.

Publicity

The Commission is indebted to Associated Industries of Massachusetts for frequent counsel and cooperation and most particularly for free monthly space in *Industry Magazine*. For 10 months, the Commission carried a double page, two-color spread in this publication, the only expense to the Commonwealth being for preparation of the advertisements.

New Industrial Expansions

It appears that under the present industrial census system, a year's delay in the securing of final statistics relating to the number of new industries entering the state, plus data on expansions, liquidations and migrations of old industries, is the best that can be expected in the absence of a compulsory reporting law.

A survey for 1939 made by the Associated Industries of Massachusetts in cooperation with the Commission and the various chambers of commerce, revealed 227 new industries and 127 major expansions among old industries. These figures, in addition to being incomplete, do not disclose how many of the new industries merely shifted from one locality to another within the state.

The Commission has been able, even in the short time since its acquisition of an industrial agent, to smooth out troubles of some industries that were threatening to leave Massachusetts. The Commission believes that the retaining of present industries is fully as important as the securing of new ones.

AGRICULTURAL PROMOTION

No planned campaign of agricultural promotion has been carried on in 1939 but the Commission followed its previous policy of cooperation with the Department of Agriculture and of affording assistance as recommended by the Commission of Agriculture and advisory council on agriculture.

Under this procedure 20,000 poultry folders were designed, printed, and the major portion distributed from the Massachusetts Poultry Exhibit at the World Poultry Congress, held in Cleveland. The Commission also defrayed the expense for the exhibit attendants and for transportation of the exhibit and staff to and from Cleveland, Ohio. This was the first time a World Poultry Congress has been held in the United States.

The Commission also cooperated with apple growers of the state to make possible the Spring Blossom Festival, an annual event, which is growing in importance.

REPORT OF THE MASSACHUSETTS LABOR RELATIONS COMMISSION

Michael F. Phelan, *Chairman;* Patrick J. Sullivan, Francis M. Curran.

Harold L. Burke, *Executive Secretary.*

Summary of Activities

This annual report covers the fiscal year beginning December 1, 1938 and ending November 30, 1939, the second full fiscal year of the Commission's existence.

The space allotted the Massachusetts Labor Relations Commission in the document embodying its annual report is so much limited that any comment or recommendation which the Commission may deem proper to present must necessarily be extremely brief.

Two of the main purposes of the Labor Relations Law as appear in the law itself are to remove various forms of industrial strife or unrest and to encourage the practice and procedure of collective bargaining. After an experience covering a period of two years and three months, the Commission feels fully justified in asserting that, in its administration of this law, strikes have been prevented from arising, strikes which have arisen have been settled, and other forms of industrial strife have been averted, and that there has been a decided impetus given to collective bargaining between the employer and employee.

It is significant that there has been a steady and definite increase as time has gone on in the number of petitions for certification and in the certifications granted by the Commission. This is a plain indication that both employers and employees realize the benefits to be derived from the processes of collective bargaining and have utilized in greater degree the certification method offered by the law as the best means of obtaining the advantages to be secured by collective bargaining. It is clear that certification proceedings often determine speedily whom the employees want, if anybody, as their representative for bargaining purposes and obviate prolonged and fruitless negotiations between the parties as has so often happened in the past. In ascertaining the will of the employees in determining who shall be their representative for bargaining purposes, the Commission has found that by far the best method which can be employed is by means of an election under the Australian ballot system and hence the Commission in these cases has almost invariably conducted such elections. Both employers and employees have praised the Commission for its efficiency in conducting elections and have commended without qualification the protection afforded all interested parties whereby the secrecy and integrity of the ballot were maintained. It has been a source of gratification that strikes and other unpleasant labor disturbances have been prevented at the outset through promptness on the part of the Commission in the handling of petitions for certification. As will be noted from the statistics herewith presented, thousands of employees were directly involved in the various certification proceedings before the Commission.

The Commission has been punctilious in the matter of adequate notice served upon parties involved in hearings and elections. It has been amply repaid for its care and effort by the fact that there was in this respect an almost entire absence of objection or criticism.

The Commission feels that it must once more call attention to the fact that the force of hearings stenographers is totally inadequate for the important work in which they necessarily participate. It is imperative that the Commission be supplied with more hearings stenographers at the earliest possible date if delays which may be serious in their consequences are to be avoided. The Commission is prevented from securing the expeditious disposal of its business when it is obliged to wait for long periods of time for transcripts of

testimony from competant hearings stenographers because of the total inadequacy of the force available to the Commission with the limited funds appropriated for this purpose.

The fact that an unexpended balance of the amount appropriated for personal services was turned back to the state treasury as shown in the financial report hereto attached does not indicate that this money was not necessary for the use of the Commission. A major part of the appropriation allotted to the Commission was not made until too late in the fiscal year to enable the Commission to use necessary funds for the hire of additional stenographic employees. The time remaining after the appropriation was made was too short to allow the Commission to employ extra stenographers who were badly needed all during the previous months. Under any circumstances, the remedy is not to be applied by employing temporary stenographers. What the Commission needs is additional permanent hearings stenographers. It is to be hoped that at least some of those organizations or individuals who are interested in administration of this law should do what they have omitted to do in the past; that is, support the Commission by appearing before the proper committees when the matter of additional stenographers is taken up in the legislature and urging with force a proper appropriation for this purpose. The statute requires that there be made a transcript of all the testimony offered in all formal hearings before the Commission. The purpose of the requirement is apparent. In all cases that go to Superior Court, the Superior Court Justices must have a transcript of the record for their use. A complete transcript, moreover, is needed for the use of each member of the Commission as formal hearings, due to the exigency of our work, are presided over by a single Commissioner. The Commission can not emphasize too strongly the necessity for the grant by the legislature of sufficient funds to remedy this most serious deficiency.

There is another factor which has hampered the Commission in the disposal of cases coming before it and that is the demands of counsel for employers and employees alike for continuances, continuances which generally the Commission is not in a good position to refuse but continuances which cause delays. In the future, the Commission, while it intends to be as accommodating as possible in this respect, will insist that continuances be granted only for the most urgent reasons.

During the period of its existence, the Commission has had valuable experience in the solution of the many and complex problems presented to it and has thereby acquired a store of knowledge relative to the interpretation and administration of this important law. From its experience and knowledge gained thereby, the Commission has succeeded in securing gradually and perceptibly a smoother operation in its administration of this law which is of recent enactment and which embodies for the first time within this commonwealth certain principles affecting the relationship between employer and employee.

The legal problems in particular have been difficult and often involved matters new in their nature. Constantly, problems of law have arisen on matters which have never had adjudication in the courts and the Commission has not had, therefore, any guidance from the courts for the solution of problems often difficult and complicated. The law provides for appeals to the Superior Court. Recourse has been had to this aspect of the law by interested parties including the Commission itself. It has been a matter of genuine satisfaction to the Commission and a matter inspiring in its members renewed confidence in their ability to meet successfully the perplexing problems of the future that in the cases reviewed by the Superior Court during the period covered by this report, the Commission's orders and decrees have in every instance been affirmed by the higher tribunal.

TABLE A

Fiscal Year—December 1, 1938 to November 30, 1939

A. Total Number of Cases Before the Commission — 403
1. Total number of unfair labor practice cases 198*
2. Total number of certification cases 205

*Note: The great majority of the 198 unfair labor practice cases involve more than one violation of the Law.

B. Total Number of Formal Hearings — 179
1. Total number of formal hearings—unfair labor practice cases . 32
2. Total number of formal hearings—certification cases . . 147

C. Total Number of Days of Formal Hearings — 220
1. Total number of days—unfair labor practice cases . . . 96
2. Total number of days—certification cases 124*

*Note: Difference in number of certification cases (147) and total number of days of certification hearings (124) occurs because on certain days two or more cases were consolidated for hearing purposes.

TABLE B

Certification Cases

Fiscal Year—December 1, 1938 to November 30, 1939

1. Cases Handled 205
Number of employees directly involved in cases handled . . 8262
2. Disposition of Cases Handled
A. Cases withdrawn (many as result of amicable adjustment) 32
(1) Before hearing 24
(2) During hearing 1
(3) After hearing 7
B. Petitions dismissed for want of prosecution without formal hearings 10
C. Petitions dismissed for want of jurisdiction without formal hearings 1
D. Certifications issued without elections after formal hearings . 17*
E. Certifications issued as a result of elections after formal hearings 104*
F. Petitions denied as a result of elections after formal hearings . 35*
G. Petitions continued generally, at request of parties . . . 2
H. Petitions denied without elections being ordered . . . 1*
I. Petitions dismissed because of finding of Commission that union involved was a company union 3

*Number of employees directly involved: (D) 368, (E) 6201, (F) 1529, (H) 164.

Total days of hearings — 124

Total number of formal hearings — 147

TABLE C

Unfair Labor Practice Cases
Fiscal Year—December 1, 1938 to November 30, 1939

Note: Section 4 referred to below is Section 4 of Chapter 150 A of the General Laws

Type of violation . .	Violation Sec. 4 (1)	Violation Sec. 4 (2)	Violation Sec. 4 (3)	Violation Sec. 4 (4)	Violation Sec. 4 (5)	Total
No. of violations . .	153	27	110	None	18	308
No. employees immediately involved in matter of charges .	10,663	6,363	290	None	3,095	20,411
Withdrawal as result of amicable adjustment between the parties effected by Commission after informal conference .	75	11	57	None	4	147
Withdrawal after investigation disclosing lack of evidence or want of jurisdiction	2	1	None	None	None	3
Dismissal after investigation for want of prosecution . .	4	1	3	None	1	9
Dismissal after investigation for lack of evidence . . .	60	9	46	None	8	123
Dismissal after investigation for lack of jurisdiction . .	2	None	2	None	None	4
Complaint settled during trial	5	2	4	None	1	12
Complaint sustained .	12	4	5	None	2	23
Complaint dismissed .	7	None	6	None	1	14
Orders complied with without court action	1	None	None	None	None	1
Petition for enforcement filed in Superior Court	3	None	3	None	None	6
Compliance with order before hearing in Court on petition for enforcement . . .	1	None	1	None	None	2
Hearings in Superior Court on petition for enforcement . . .	1	None	1	None	None	2
Decision by Superior Court upholding Commission's Decision	1	None	1	None	None	2
Petition filed and hearing in Superior Court after 11/30/39 awaiting court's decision	2	None	1	None	None	3
Not disposed of on 11/30/39	35	5	24	None	4	68*

*68 charges not disposed of on 11/30/39.
34 cases not disposed of on 11/30/39.
Of these 34
8 since decided by Commission
4 awaiting Commission's decision
20 otherwise disposed of (dismissed, etc.)
1 awaiting trial and agreement of counsel as to date of trial
1 in process of trial

There are many cases involving unfair labor practices or certification of representatives concerning which the Commission and its staff have advised parties as to the procedure to follow and of which no record has been kept.

Number of employees working within the commonwealth for employers against whom charges were made 37,597

Total days of unfair labor practice hearings 96

Total number of formal hearings 32

Number of folders containing cases originating in fiscal year 1939 156
(Each folder contains in most cases more than one violation of the law but grouped this way for purposes of filing.)

TABLE D

Financial Statement

Fiscal Year — December 1, 1938 to November 30, 1939.

Received from General Appropriations	$48,829.53	
Received from Supplementary Budget	16,310.00	
Total	$65,139.53	$65,139.53
Expenditures and Obligations		
Salaries	$53,289.69	
Special services	192.29	
Supplies	811.87	
Equipment	102.36	
Furniture	244.50	
Traveling expenses	1,748.82	
Rent, light, tel. & tel.	5,647.19	
Other services & expenses	455.77	
Total	$62,492.49	$62,492.49
		$ 2,647.04
Return to State Treasury Unexpended Balance		
Personal services	$ 2,610.31	
Other expenses	36.73	
Total	$ 2,647.04	$ 2,647.04
Turned over to state treasury income received from sale of stenographic records	$460.23	$460.23

Financial Statement Verified.
Approved: Geo. E. Murphy, *Comptroller.*